JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XV MAY, 1926 No. 5

1876–1926

Charles Bullock, the President-Elect of the centennial year of this Republic, was born a century ago, February 25, 1826. He presided at the meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, held in Toronto. In his address he gave an historical account of pharmacy, in the introduction of which he referred to the pharmacists' part in the progress of medicine, and concluded with an expression relative to the fostering and directing influence of the AMERICAN PHARMACEUTICAL ASSOCIATION; several of these paragraphs are quoted because they do not materially differ from present-day thoughts.

"The disciple of Aesculapius plays an humble part in the great drama of human progress when viewed only as the knight of the pestle and the mortar, but when possessed of congenial tastes, and educated to his profession, the narrow arena of the shop expands, covering the face of nature. Botany, chemistry and mineralogy are sciences with which his calling is intimately connected, and if a careful observer in any of these departments, he adds to the stock of knowledge which marks human progress.

"The shop of the apothecary is oftentimes the school where the mind is trained to observation, tastes developed, and original investigations pursued, which result in giving to science a name to be enrolled among her worthy votaries, and results which often outlive the name of the discoverer." . . . . . .

"I am much impressed with the extent of the field of usefulness open to this ASSOCIATION. In the sharp competition for business which marks our age, some fostering and directing influence seems necessary for the interest of pharmaceutical progress. As a conservator of such interest this ASSOCIATION has my best wishes and will have my cordial support."—E. G. E.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase St., BALTIMORE, MD.

THE INFLUENCE OF THE LITERATURE OF PHARMACY ON PHARMACY AND ITS VOTARIES.

IN a paper on the Literature of Pharmacy, presented to the Section on Historical Pharmacy and printed in this issue of the JOURNAL, Frederick B. Kilmer gives some interesting information and data, and from these he makes deductions that apply to the progress of pharmacy. Not infrequently there is complaint that pharmacy is not receiving better interpretation in literature. There may be a reason in that a comparatively small percentage of pharmacists look into the history of pharmacy, read its literature and study the viewpoints of authors who have depicted the druggist, if not the pharmacist, in their writings. We may not agree with their views, which in some instances are misrepresentation, still their presentations are part of literature, and we find them in George Eliot, Kingsley, Thackeray, Dickens, Scott, Ben Johnson, Shakespeare, etc., as well as in "Tono Bungay" and "Veneerings." Artists endeavor to depict events and scenes of life according to their viewpoints, and authors, whose aim is to leave a truthful record, employ the lights before them, but shadows often interfere with their vision.

The literature of pharmacy and relating to pharmacy would require long years to classify or review. The Library of the Surgeon General at Washington has about 9000 volumes; more than a third of them are concerned with pharmacy, to some extent; the Lloyd Library has about 52,000 volumes and half of them are in some way related to pharmacy; the AMERICAN PHARMACEUTICAL ASSOCIATION Index, up to 1902, has about 55,000 titles and 70,000 references.

Writers will take privileges in their productions that fit into their story, in which facts are sometimes distorted in order to hold the readers' interest.

The foregoing does not apply to historical records wherein the pharmacist should be fairly appraised for his service. This represents a thought realized by the American Historical Association which, under the chairmanship of Hon. Albert J. Beveridge, is encouraging research work that will correct erroneous statements regarding momentous events because of prejudice or guess, and also fill up gaps in historical accounts.

Each local association should be a press agency for pharmacy, acquainting the public with important facts and events concerning it, supplementing, in a way, the Drug Trade Bureau of Public Information, and presenting the pharmacist's viewpoint with assurance that he is jealous of his personal reputation, and he understands that security and stability of his profession and business depend in a large measure upon public confidence in all business. Also, in desiring the truth to be known of pharmacy and the drug business, pharmacists are working for the general good of all professions and business and for those served.—E. G. E.

RESULTS PROVE THE VALUE OF EXPERIENCE AND TEACHING.

THE Director of the Department of Business Management is presenting a census of business costs in this issue of the JOURNAL. The data have been compiled from actual business life; the reports are based on facts and will, doubtless, prove of value to all who apply the results to their own business and be an incentive to some who are striving for better net returns and encouragement for those who are fearful that their business management does not average with others who are similarly engaged.

Another article of the same Department deals with guide-posts to profit and progress, and points out how the activities may contribute to a better understanding of the business.

The foregoing applies to transactions in business—how these may constitute the tests for proving efficient management. In a related way the results of examinations may be indicators of correct teaching methods, if not of those who apply them. It appears to the writer that one of the bonds of the American Association of Colleges of Pharmacy with the National Association of Boards of Pharmacy is, in a degree, represented by the results of examinations. This much, perhaps, may be said, if many candidates fail in making the required percentage in the subjects there is a defect in the system which comprehends the preparation and testing of those who seek to engage in pharmacy.

The writer has been impressed with examination results for the Fairchild Scholarship; usually there have been a few candidates who make exceptional records, a somewhat larger number who range low, and the records of the majority come in between these extremes. It is assumed that the candidates are selected because of their standing in class. In a related way the same conditions obtain in State Board examinations, therefore the article by Professor Cooper under the Department of the American Association of Colleges of Pharmacy, in this issue, seems a timely one—well worthy of discussion and study by the members of the latter organization and of the National Association of Boards of Pharmacy. "All reasoning is retrospect; it consists in the application of facts previously known."

The title of this comment also permits a reference to the paper by Miss Greenwalt, a hospital pharmacist, in which she discusses the related value of drug-store experience and that obtained in a hospital pharmacy.

Terence may have been not so very far from right when he implied that of those things we deem ourselves best acquainted with we may know very little, and theories and ideas that appear advantageous are sometimes inapplicable.—

E. G. E.

THE SERVICE OF PHARMACY.

The service record of the AMERICAN PHARMACEUTICAL ASSOCIATION enables us to vision its future service. What we need for pharmacy is more publicity of a high order so that the mission of pharmacy may be better understood by the public, thereby stimulating a greater interest in the services pharmacists render—the NATIONAL FORMULARY is an example. "In this day of general publicity useful and honest opinion must make its appeal to the public in the face of other rival efforts to influence opinion." President Wendell C. Phillips, of the American Medical Association, voiced related thoughts in his inaugural address, at Dallas.

SCIENTIFIC SECTION

PHYTOCHEMICAL NOTES.*

96. THE VOLATILE OIL OF MYRICA ASPLENIFOLIA ENDL.

BY H. A. BRAUN.†

Gildemesiter records[1] the distillation of three species of *Myrica*, the only genus of the family *Myricaceae* that has thus far yielded a volatile oil, *viz.*, of *Myrica Gale* L., *M. cerifera* L., and of *M. asplenifolia* Endl. The last is recorded by Gray as belonging to a distinct genus, *viz.*, *Comptonia asplenifolia* Ait. Whereas sweet gale oil has been chemically examined by several investigators, bay berry or wax-myrtle oil has been studied with reference to its physical constants only thus far. Sweet-fern oil appears to have been distilled but once, *viz.*, by Schimmel & Co. in 1890,[2] who obtained a yield of 0.08 per cent. They found a specific gravity of 0.926 and add that the oil has a spicy, cinnamon-like odor.

Inasmuch as an opportunity presented itself to distill some of the oil, it seemed highly desirable not to neglect it. About 540 lbs. of fresh material were collected in the vicinity of Pelican Lake and Rhinelander, Wisc., where the plant constituted the undergrowth of the cut-over Jack pine and red-pine forests. The partly dried material yielded upon distillation about 60 cc. of oil or 0.02 per cent as computed for the fresh material. The oil was dark yellow in color and had an odor which somewhat resembled that of new mown hay; $d_{25°} = 0.8945$, hence somewhat lower than that recorded by Schimmel & Co.; $D^{22°} = 1.6629$; $\alpha_{D^{25°}} = -3° 75'$ in a 190-mm. tube. A methoxy determination gave a negative result.

When fractionated, 40 cc. of oil yielded the following fractions of which the densities only were determined.

Fraction.	B. p.	Vol.	$d_{25°}$.
I	−100°	5.0 cc.	0.7346
II	100–150°	4.5 cc.	0.8620
III	150–200°	5.6 cc.	0.8850
IV	200–220°	8.2 cc.	0.9075
V	220°	....	....

Schiff's reagent failed to reveal the presence of even traces of aldehyde in the lowest fraction.

The second fraction, upon saponification, revealed an ester content of 22.5 per cent computed as $C_{10}H_{19}OCOCH_3$. The boiling point, however, is too low for such a high molecular ester.

The third fraction (150–200°) revealed a similar ester content. When treated with semicarbazide hydrochloride it yielded a crystalline compound, too small in amount for recrystallization, that melted at 249°. With Schiff's reagent this fraction gave a decided test, thus indicating that the semicarbazone may be that of an aldehyde present in this fraction.

Fraction 200° to 220°, upon saponification, revealed an ester content of 28.28 per cent computed as $C_{10}H_{19}OCOCH_3$. Acetylation revealed a total alcohol con-

* From the laboratory of Edward Kremers. † Fritzsche Brothers Fellow.

[1] *Die aetherischen Oele*, Bd. II, p. 327 *et seq.* [2] *Bericht S. & Co.*, p. 50 (Oct. 1890).

tent of 45.74 per cent computed as $C_{10}H_{19}OH$. Hence, free alcohol is present to the extent of 17.46 per cent. Treatment with phenyl isocyanate yielded diphenyl urea, m. p. 230°, but no urethane.

It is apparent that a much larger amount of oil will be necessary to reveal its chemical composition.

STUDIES IN THE GENUS MENTHA, XI.

THE OIL OF MENTHA CANADENSIS, L.

BY H. A. BRAUN.*

The first oil to be distilled was reported by Schimmel & Company[1] in 1893 from material collected at Passiac, N. J. In 1898, Florence M. Gage[2] distilled an oil from material collected in the neighborhood of Madison. A larger quantity of of oil, distilled from material collected by O. A. Beath in Wyoming, was examined by R. E. Kremers[3] in 1923. During the summer of 1925 the opportunity presented itself to obtain material from the northern part of Wisconsin. About 450 pounds of fresh flowering material were collected between August 3rd and August 24th at Crandon, Wisconsin, along the banks of Swamp Creek, the outlet of Stone Lake, and in the marshes which border this stream. This yielded 170 pounds of dried herb which, in turn, yielded 936 grams of oil or 1.16 per cent.

Schimmel & Company[1] report a yield of 1.23 per cent from the dried herb. Miss Gage[2] reports 1.25 per cent from the dried herb. R. E. Kremers[3] reports a yield of 1.80 per cent of primary oil and 0.36 per cent of cohobated oil, making a total of 2.16 per cent.

The oil was of a greenish yellow color and possessed a penetrating minty odor. The physical and chemical constants are herewith tabulated with those of previous investigators for the sake of ready comparison.

	H. A. B.	R. E. K.	F. M. G.
$d_{25°}$	0.8974	0.931	−0.927 to 0.935
$\alpha_{D^{25}}$ 10 cm. tube	+32° 24′	+18.75°	+16° 11′ to 20° 32′
Phenol assay	none	none	traces of thymol or carvacrol
Ester value	22.78	11.2	
Per cent ester ($C_{10}H_{19}OCOCH_3$)	8.06 per cent	4.0 per cent	
Ester value after acetylation	32.00 per cent	33.6	
Per cent total alc.	15.69 per cent	9.6 per cent	
Per cent free alc.	7.90 per cent	6.5 per cent	
Pulegone assay (neutral sulphite)	20.00 per cent	90 per cent	
Pulegone assay (acid sulphite)	18.00 per cent		

Though the oil agrees better with the other Wisconsin oil than with the Wyoming oil, it differs appreciably even from the former. Five hundred and thirty-six grams of oil, when shaken with a 5 per cent solution of potassium hydroxide yielded no more than a few drops of oil on acidification. Flueckiger's test for thymol and carvacrol gave a negative result.

---

* Fritzsche Brothers Fellow.

[1] *Bericht S. & Co.*, p. 45 (Oct. 1893).

[2] *Pharm. Rev.*, 16, p. 422.

[3] Jour. A. Ph. A., Vol. XIV, p. 32.

Dried over anhydrous sodium sulphate, the oil, after having been shaken with aqueous potassa, revealed the following physical constants which are herewith contrasted with the corresponding constants observed before this treatment, *viz.*,

	Before.	After.
$d_{25°}$	0.8974	0.8905
m_D	1.4609 (at 25°)	1.4595 (at 22°)
α_D	+32° 24′ (at 25°)	+31° 15′ (at 22°)

The change, though apparent, is not great. Moreover, it is not in the direction in which one would expect to find it. Removal of presumably inactive phenol might be expected to increase the angle of rotation, whereas it has been reduced. However, the slight lowering of the density is in harmony with what we might expect.

One hundred cc. of the oil thus treated were then fractionated and the constants of the fractions determined. The results are herewith tabulated.

Fraction.	B. p.	Volume, cc.	$d_{25°}$.	$\alpha_{D^{25°}}$.
I	−100°	7.0	0.8756	.....
II	100–140°	33.5	0.8912	+15.9°
III	140–175°	31.4	0.8994	+25.5°
IV	175–190°	18.3	0.9051	+21.2°
V	190°+	5.4	....	.....
		95.6		

Fractionation revealed no pulegone, although the assay seemed to indicate the presence of about 20 per cent of this ketone.

The first fraction, when tested with Schiff's reagent, gave a negative test for aldehydes.

Upon acetylation, Fraction 100° to 140° revealed 25.27 per cent of alcohol computed as $C_{10}H_{19}OH$. Upon saponification it showed the presence of 17.37 per cent of esters computed as $C_{10}H_{19}OCOCH_3$, revealing, by difference, the presence of 6.79 per cent of free alcohol.

The balance of the oil, when fractionated, yielded rather different results as shown in the table:

Fraction.	B. p.	Volume, cc.	$d_{25°}$.	$\alpha_{D^{25}}$.
1	−100°	13.5	0.8710	− 3.25°
2	100–140°	22.0	0.8852	+ 6.35°
3	140–175°	36.0	0.8887	+ 7.50°
4	175–200°	243.0	0.8952	+21.22°
5	200–212°	231.0	0.9050	+31.95°
6	212°+	...	....	.....
		Total 545.0		

With semicarbazide hydrochloride, Fraction 1 yielded no crystalline product, Fraction 2 a small amount.

The third fraction (140–175°) when treated with semicarbazide hydrochloride gave a heavy precipitate, which, upon recrystallization, yielded two fractions; one sparingly soluble in 50 per cent alcohol which melted at 180°; the other more readily soluble, one which, after repeated crystallization from 50 per cent alcohol, melted at 137°.

According to Wallach, "Terpene und Campher," the semicarbazone of inactive Δ^4 mentheneone-3 melts at 142°, that of the active modification at 170–171°; the semicarbazone of methyl-1-cyclohexanone-3 at 180°.

No semicarbazone was obtained from Fraction 175–200°.

THE EFFECT OF NICOTINE ON THE GASTROCNEMIUS MUSCLE OF THE FROG.*

BY RUPERT A. CHITTICK.[1]

INTRODUCTION.

The value of nicotine as a means for the scientific study of muscle irritability and the relationship to nervous control was first established by Langley and Dickinson (1). At that time they believed that "the effect of nicotine upon the skeletal muscles of mammals appears to be entirely due to a stimulation of the central nervous system." Later work, however, carried out by Langley (2) demonstrated that the characteristic muscle twitching produced by nicotine was still in evidence when the nerves had been allowed to degenerate and that the muscle fibers assumed a characteristic "spindle form" when a solution of nicotine was applied directly to the muscle. This characteristic spindle formation, when dilute solutions of the alkaloid were used, was most in evidence at the myoneural junction but as the strength was increased the reaction gradually spread to more remote portions. For this reason Langley designated the action of nicotine as being upon certain "receptive substances" interposed between the nerve endings and the contractile portion of the muscle.

Further light was thrown upon the nature of these receptive substances by Lucas (3) by the use of optimal electric stimuli. He was able to show that the number of receptive substances varied in different muscles and those containing two or more varied in their irritability to the stimulus, depending upon the strength of the stimulus. In other words the receptive substances were scaled as to their sensitiveness to stimuli.

It has been shown (4) that the non-user of tobacco doing voluntary work has, during the morning, an increase in his ability to do work and a fall in power during the evening. It has been further demonstrated that "moderate smoking, although it may influence in diminishing the power to do muscular work, neither stops the morning rise nor, when done early in the evening, hinders the evening fall."

If the skeletal muscles were the only points of action of nicotine the hygienic as well as the moral problem of smoking would be greatly decreased. But it has been repeatedly demonstrated (1), (5), (6), that a more marked action occurs on the higher centers of the central nervous system and the ganglia of both the sympathetic and para-sympathetic systems. It is reasonable to suppose, then, the diminishing effect upon muscular work might be caused as a secondary effect of the primary nicotine nervous action.

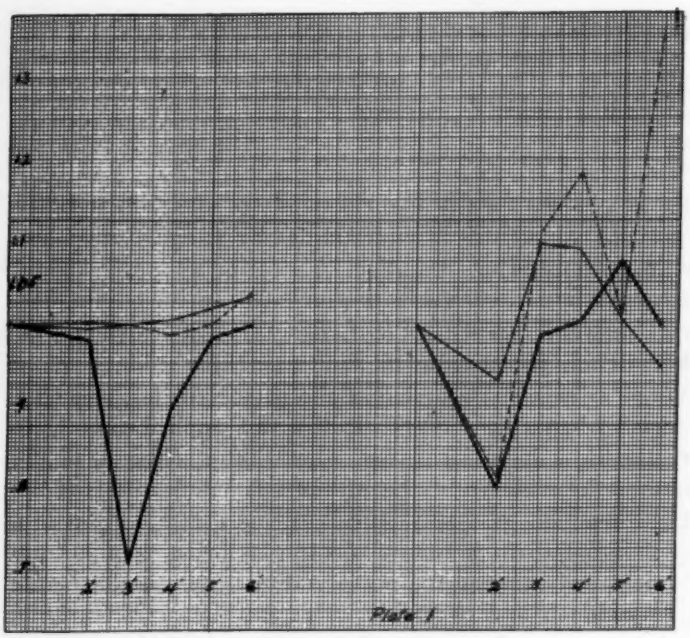
It is desirable, then, to study the action of skeletal muscle under the influence of nicotine without the use of a stimulus that has been altered by passing through a depressed central nervous system.

METHOD.

The frog was chosen as the animal best suited for experimentation along this line because of its suceptibility to the action of nicotine and because of the ease

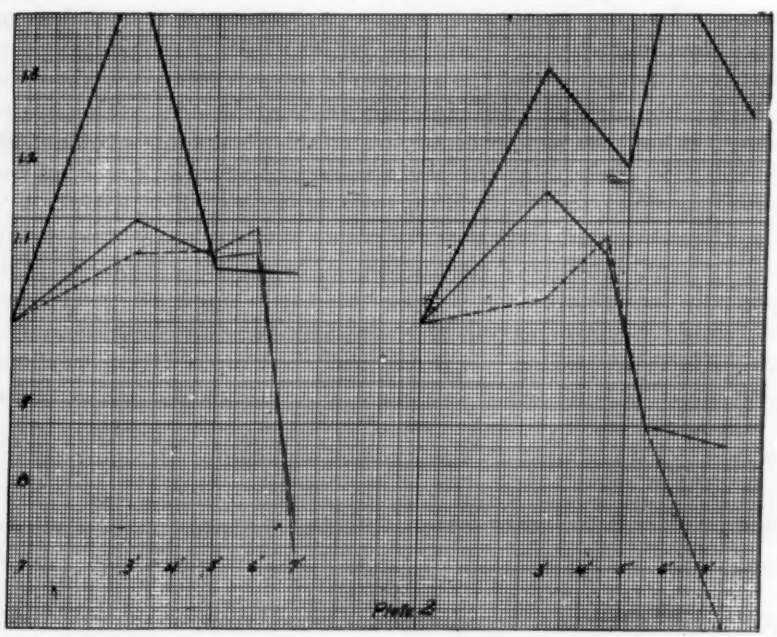
* Read before Scientific Section, A. PH. A., Des Moines meeting, 1925.

[1] College of Pharmacy of the University of Nebraska.



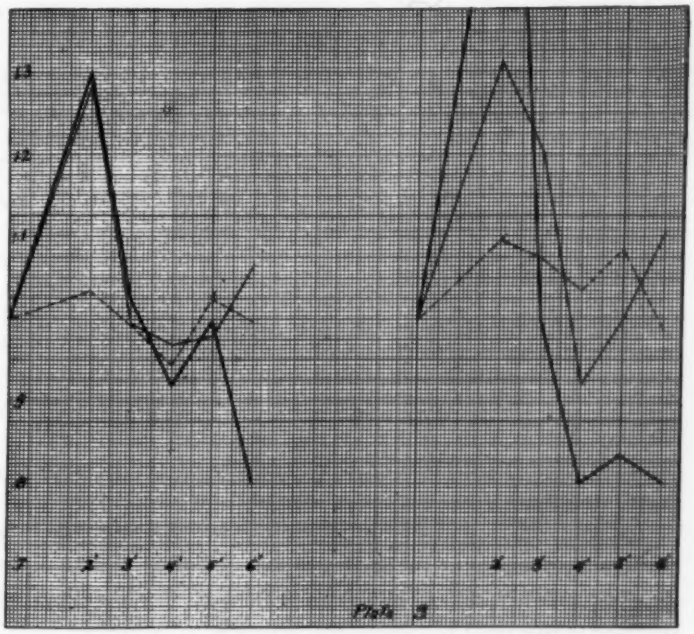
with which it can be handled. As for the method of procedure, two main objects were sought. First, a method by which each animal could be made its own control, and second, one that would keep the muscle under as nearly normal conditions as possible. In order to accomplish this, the following method of procedure was adopted:

For each experiment a healthy frog was selected. On being brought into the laboratory it was carefully weighed to the tenth of a gram and the brain and cord pithed. It was then placed on its back and an incision of one-half to three-fourths



of an inch in length made through the skin on the ventral surface of the thigh. The adductor magnus and sartorius muscles were then spread and the femur bone

exposed. This was cut far enough above the knee so as to be easily fastened in a muscle clamp. Care was taken, however, to avoid cutting main blood vessels and in case any marked hemorrhage occurred the animal was discarded from use in this experiment. A circle of skin was then cut from over the ankle and the tendon of Achilles freed. By inserting a bent pin through this tendon the classical nerve-muscle preparation was obtained with but slight injury to the normal circulation. The muscle was then fastened in the clamp and attached to a light muscle lever arranged to mark upon the smoked paper of a kymograph. In stimulating the muscle, a special electrode and boot were prepared so that the stimulus could be applied directly to the sciatic nerve. Single "make" and "break" induction shocks were used and a signal magnet included in the primary circuit. The stimuli were at all times submaximal, at times the "make" stimulus failed to cause a contraction. The magnification of the contraction remained constant throughout the study, as did the load lifted. The speed of the rotating cylinder was always taken with a tuning fork vibrating one hundred times a second. A series of normal make and break contractions were first taken from the right leg and then from the left. One one-hundredth of a cubic centimeter, per gram body weight, or its equivalent, of the nicotine solution was injected into the anterior lymph sac of the frog and allowed to act for two or three minutes after which the muscle was again placed in the clamps and a second series of contractions taken from each leg. The time of injection was recorded as well as the time at which the contraction of each leg was taken.



RESULTS.

For the sake of brevity the results are shown graphically. The abscissa shows the ratio of the nicotinized to the normal muscle while the ordinate refers to the number of minutes between the time at which the nicotine was injected and the time at which the contraction was recorded. In each plate the left-hand series refers to the make contractions, and the right-hand series to the break contractions. The broad line refers to the latent period, the fine line to the period of contraction (the

phase of shortening and of relaxation together), while the broken line refers to the height of the contraction. Plate 1 shows the results obtained from a solution of 0.00001% nicotine. Plate 2 refers to the 0.0001% solution and Plate 3 to the 0.001% solution.

When injected into the normal unpithed frog, the 0.00001% solution caused no visible outward effects save a short period of increased excitability. The two higher strengths did not show the stage of increased excitability but were markedly depressing from the first and maintained that condition for two or three hours.

The Latent Period.—Studying the graphs of the latent period, it will be noticed that for the weakest solution the latent period is first shortened and finally comes back to normal or longer than normal. In the next weakest solution the period is lengthened from the first though it finally returns to nearly normal. The next solution causes a similar lengthening of the latent period but the duration is much less and finally a second period of shortening occurs.

The Period of Contraction.—The time required for the shortening and relaxation of the muscle shows an almost constant tendency to be lengthened. In only one case (Plate 2) does it show any marked shortening.

The Height of Contraction.—The first effects of the nicotine seem to cause a heightened contraction followed by a depression of the contractility and then a second increase. It does not vary as greatly as the latent period but more than the contraction period.

INTERPRETATION OF RESULTS.

Following up Langley's idea of the action of nicotine upon the receptive substances of the muscle, we would expect a change in the susceptibility to external stimuli. As the receptive substance is stimulated by the alkaloid, the contractile portion responds by a quicker action. As the receptive substance is depressed, the contractile portion is correspondingly slower in coming into action. But since there are clearly two curves of stimulation and depression as shown by the latent period and the height of contraction, it would seem that there are at least two receptive substances in the gastrocnemius muscle and that they are affected in order of their sensitiveness. That is, the more sensitive substance is first stimulated and depressed and then the next lower receptive substance. As was stated in the introduction, Keith Lucas demonstrated the presence of receptive substances of varying sensitiveness by the use of optimal electric stimuli. It seems reasonable that although all may be acted upon simultaneously, the most sensitive would show its action first and as it lost in activity or the second gained in activity its action would gradually be displaced by that of the less sensitive receptive substance.

SUMMARY.

1. Nicotine causes at least two phases of shortening and lengthening of the latent period. 2. The time required for a muscular contraction is increased under nicotine. 3. The height of contraction shows two stages of increase and decrease under nicotine.

BIBLIOGRAPHY.

(1) Langley and Dickinson, *J. Physiol.*, VII, 265. (2) Langley, *Ibid.*, XLVII, 159. (3) Keith Lucas, *Ibid.*, XXXV, 103. (4) Vaughan Harley, *Ibid.*, XVI, 122. (5) Eggleston and Hatcher, *J. Pharm. Exp. Ther.*, VII, 225. (6) Pilcher and Sollman, *Ibid.*, VI, 325.

STRUCTURAL VARIATIONS IN ERYTHROXYLON LEAVES.*

BY C. W. BALLARD.

INTRODUCTION.

The genus *Erythroxylon* is indigenous to tropical countries and several species have been under cultivation in South America since prehistoric times. The records of early Spanish explorers note the use of coca leaves by the natives and the stimulating effects resulting therefrom. Botanical records of the coca plant first appear in Monardes' "Historia Medicinal" (1580), repetition being made in "Clusius' Exoticorum Libri Decem" (1605). The first specific description of *Erythroxylon Coca* is that of Lamarck in "Encyclopedie Methodique" (1786), this description being based upon specimens of De Jussieu obtained in Peru. The illustration of Cavanilles (Diss. iii, pl. 229–1789), said by Morris (*Kew Bull.*, xxv. 2) to have been made from the same specimens, pictures the leaves as oval, whereas they are described by Lamarck as ovate and pointed. Cavanilles' figure, although differing in this respect from the description of Lamarck, is said by Rusby to agree with the cultivated *Erythroxylon Coca* of Bolivia as he has seen it and also with the figure in Engler and Prantl (17). Dyer states that this figure agrees with Hooker's illustration of *Erythroxylon Coca* in *Botanical Magazine*, 1836, from a plant collected by Matthews near Chinchao, Peru. But complications have arisen through circulation of a figure showing the leaves as ovate instead of oval. This figure is claimed by Holmes (10) to have been incorrectly copied from Hooker's original, but Rusby holds that both of these illustrations apply to *Erythroxylon Coca* and that Cavanilles' figure is of typical cultivated leaves, whereas the ovate leaves represent those of the wild growing plant. Dr. Burck in an article in *Teysmannia* makes the statement that during his survey he finds no plants in Bolivia and Peru with ovate leaves and if this were an outstanding character of the plant described by Lamarck it was no longer common in those countries. Furthermore all commercial supplies of Bolivian or Huanuco coca leaves show the oval form as illustrated by Cavanilles.

This study was undertaken at the suggestion of Dr. H. H. Rusby who, because of his botanical explorations in South America, has been able to furnish specimens and data at first hand. The first intention was to limit this research to those species of Erythroxylon mentioned in pharmaceutical literature, but as the work has progressed the possibilities of a systematic histological survey as related to classification have become apparent and the scope has been broadened beyond the original plan. The work is divided into two major sections—the first dealing with the gross characters of the leaves of several species of Erythroxylon; the second treating of the histological structure of the various specimens. In the latter section interest chiefly centers about the question of using histological data as an aid in the determination of closely related species of a given genus and whether or not such evidence might not be made more use of in systematic botany.

From an economic standpoint the comparatively few species of Erythroxylon which yield cocaine and the related alkaloids rank first. Other species containing

* Submitted in partial fulfillment of the requirements for the degree of Doctor in Philosophy, in the Department of Botany, Faculty of Pure Science, Columbia University.

but little alkaloid, although only of botanical interest to us, may be used as masticatory agents. An alkaloidal principle was isolated by Gaedeke in 1855 and termed *erythroxyline*, but Dr. Albert Niemann made the first thorough investigation of coca leaves and gave the name *cocaine* to the chief alkaloid. Further investigations disclosed the fact that the several alkaloids occurring in the leaves might upon suitable treatment be converted into cocaine. Perhaps some of the species now only of botanical interest might serve as sources of the alkaloids but as such materials are not cultivated and are therefore not available in quantity, manufacture of cocaine from these is but a remote possibility. Cultivation has, as is the case with many other alkaloidal drugs, resulted in the production of a leaf richer in alkaloid, but as the amount of alkaloid normally present under the best conditions is small, those leaves which contain only traces of it are not likely to be used for manufacturing purposes. The majority of pharmaceutical references deal with those species which are used or have been used for the production of cocaine. The species so used are said to include *Erythroxylon Coca*, Lam.; *E. Truxillense*, Rusby; *E. Coca* var. *Novagranatense*, Morris; and *E. Coca* var. *Spruceanum*, Burck.

Usually coca leaves appear in the market under commercial names, as Bolivian, Truxillo, Huanuco, Ceylon, etc., and frequently such titles bear but little relation to botanical origin. Because of this condition we find the pharmaceutical literature chiefly devoted to an effort to properly place these commercial varieties botanically. Another difficulty encountered in the botanical identification of these Erythroxylons is due to the effects of environment upon the habit, gross structure and perhaps the histological characters. The effects of climatic conditions and cultivation or lack of cultivation have undoubtedly been responsible for some of the controversies which have arisen regarding the botanical origin of several members of this genus. Dr. Rusby has noted that when plants of *Erythroxylon Coca* revert to the wild state and are exposed to the tropical sun for several generations the following modifications occur:

1. The leaves become thicker, stronger veined, and the veins are impressed on the upper surface.
2. The upper surface becomes darker and more shining than in the cultivated coca.
3. The lower surface becomes brown and rough, with lateral lines of collenchyma obscure or lacking, or the midvein area is of a different color and surface appearance than the balance of the leaf and this area is enclosed by irregular lines of connecting veins.
4. The leaves become strongly pointed to acuminate.

On the other hand when plants of *Erythroxylon Coca* revert to a wild state but grow under shaded conditions, the leaves become larger, thinner, of paler color and with the lateral lines more prominent (14). Reference to the illustrations accompanying Dr. Rusby's article shows the decided difference between leaves of *Erythroxylon Coca* grown under both of the above conditions as contrasted with the leaves from cultivated plants. These differences are so great that it is easy to understand how disputes have arisen regarding the leaf characters of this plant. In line with these effects of environment upon leaf character is the history of a line of plants distributed to various parts of the world from Kew Botanical Garden. The parent plant, cultivated at Kew since 1869, is noted as grown from seeds of the *Huanuco* variety (*Erythroxylon Coca*, Lam.). According to Dyer this plant agrees with a specimen collected by Triana (Magdalena River, 1851) and a specimen

collected by Purdie (New Granada, 1845) and subsequently named *Erythroxylon Coca* var. *Novagranatense* by Morris (7). But the Huanuco variety of this country as imported from South America is positively identified as *Erythroxylon Coca*, Lam. by Rusby (14). The possibility of modification in leaf characters through change in environment is recognized by Morris in offering his title *Novagranatense* as a variety of *Erythroxylon Coca* and he also admits the possibility of several climatic forms which are nearly all related varieties of the same species (5).

If cultivation or lack of cultivation in the case of *Erythroxylon Coca* results in such marked changes in leaf character as those noted, it is reasonable to suppose that this plant, grown in countries far removed from its natural habitat may, in course of time, become so different as to warrant the establishment of new species, or at least new varieties. This view would be strengthened by the results secured in experimental work on many of our cultivated plants. But the question arises as to how extensive must the variations be in order to justify the adoption of new specific names. A second question concerns the histological characters of a series of more or less closely related forms of the genus Erythroxylon and to what extent the changes in leaf character due to environment or other causes are reflected in differences in histological structure.

In view of the diversity of opinions it has been deemed advisable to briefly review the available pharmaceutical literature and group the statements of different authorities under both the botanical and commercial designations of the various species of Erythroxylon.

Erythroxylon Bolivianum, Burck.—This species must be abandoned in favor of *E. Coca*, Lam., on the ground of priority. Hartwich (3).

This specific name is proposed by Burck because, although figured by Nevinny (*Das Cocablatt*, Vienna, 1885), the Bolivian leaves were not described by Peyritsch in his monograph of 82 species of *Erythroxylon* (Flora Brasilenses, Tase, 81) (7).

The leaves of this species are described by Burck as broadly elliptical; broader above the middle and less tapering (than *E. Spruceanum*); midrib ending in a short excurrent point; tapering below; 5 to 8 cm. in length and $2^1/_2$ to 4 cm. in width; two (lateral) lines apparent on the under surface; a distinct ridge appearing on the upper surface of the midrib; leaves more coriaceous than those of *E. Spruceanum* (7). This description would apply to the figure of Bolivian leaves given by Hartwich (3).

This species according to Holmes represents the Bolivian coca in British commerce (4).

Burck considers the plant cultivated in British India as sufficiently distinctive to constitute a new species which he terms *Erythroxylon Bolivianum* (13).

Burck states the following differences between his *E. Bolivianum* and *E. Spruceanum*. *Bolivianum*—Upper surface of the midrib shows a crest; the leaves are thicker (than *E. Spruceanum*); green above and light green below; more elliptical than *E. Spruceanum*. *Spruceanum*—No crest appears on the upper surface of the midrib; leaves are light green above and pale below; leaves are more tapering below than *E. Bolivianum* (13).

Rusby is of the opinion that *Erythroxylon Bolivianum*, Burck, is *E. Coca*, Lam. (14).

Erythroxylon Coca, var. Spruceanum, Burck.—Burck (1890) describes this as a variety of *Erythroxylon Coca* (2).

Holmes concludes that Java coca and possibly Ceylon and Indian cocas are from this species, which is differentiated from *E. Coca*, var. *Novagranatense*, by possessing lanceolate leaves (2).

This plant is considered by Dyer as intermediate between *E. Coca*, Lam. and *E. Coca* var. *Novagranatense*, Mor., and agrees with herbarium specimens collected by Spruce in the Rio Negro district in 1854 and subsequently cultivated in India. It differs from *E. Coca Novagranatense*, Mor. in that the leaves of the latter taper less below, are broader at the center and do not show an emarginate apex. It differs from *E. Coca*, Lam. in size, form, color of leaves (dark green) and habit of growth. It is a variety of the same value as *E. Coca*, var. *Novagranatense* (7).

Burck describes the leaves as oval becoming smaller above the middle; midrib ending in a small excurrent point; leaves tapering below into leaf stalk; 4 to 6 cm. in length and 1.5 to 2.5 cm. in width; under surface with two (lateral) lines; no ridge appearing on upper surface of midrib; leaves thinner than *E. Bolivianum*, Burck (7). This description does not agree with figures given by Hartwich (3) for *Buitenzorg Coca*. One of his illustrations is of an elliptical to oblanceolate leaf while the other is obovate, and these figures are accompanied by a notation that both leaves are from the same plant.

The plant cultivated in Java is not an intermediate form between *E. Coca*, Lam. and *E. Coca Novagranatense*, Mor., and Burck proposes the title *E. Coca*, var. *Spruceanum*, because of agreement between it and Spruce's specimens from Rio Negro in Kew (13).

Rusby holds that the title *E. Spruceanum* cannot apply to Java leaves, as it is already preoccupied (*E. Spruceanum*, Peyr.) (14), (16).

Erythroxylon Spruceanum, Peyritsch.—Holmes states that this species is nearly allied to *E. Coca*, Lam., with leaves of the same type but larger and longer; agreeing with *E. Coca*, Lam. in color and presence of a distinct ridge on the upper surface of the midrib (10).

Erythroxylon Coca, var. Novagranatense, Morris.—Morris describes cultivated Peruvian coca under title *E. Coca*, var. *Novagranatense* (2, 5).

Holmes concludes that Peruvian and Truxillo leaves are from this species and also that a mark of distinction is the oblanceolate form of the leaf (2).

It is represented by the plant cultivated at Kew since 1869 and according to Dyer this plant agrees with specimens collected by Triana (Magdalena River, 1851) and by Purdie (New Granada, 1845) (7).

Trimen states that plants grown in Ceylon are from Kew plant (*E. Novagranatense*, Mor.) but that leaves of such plants show characters typical of Peruvian leaves; being $3^1/_2$ inches by $1^1/_2$ inches; oval; pointed and dark green. Jamaica and St. Lucia plants also show characters of *E. Novagranatense* and are apparently from the Kew plant; the leaves being obovate; blunt or emarginate, membranous and of grass-green color (9).

Bentley and Trimen give a colored illustration of *E. Novagranatense* and also a figure of the *Bolivian Coca* from a specimen in the British Museum. The leaves of the former are shown as obovate to lanceolate, blunt or rounded, lines indistinct, while in the latter the leaves are broader and more elliptical, apex more pointed, lines more prominent and leaves larger. The caption accompanying these illustrations states that they are full size (10), (12).

Holmes states that the Kew plant (*E. Novagranatense*, Mor.) appears to represent the *Huanuco coca* of commerce since the seed from which it was grown was obtained from the latter plant (13).

Rusby holds that the Truxillo leaf of the British market and cultivated in British provinces from seed of the Kew plant and termed *E. Novagranatense* by Morris is distinct from both the Huanuco or Bolivian leaves and the Truxillo coca of the New York market, although nearer the latter than the Bolivian. Also that this variety is probably *E. carthagenense*, Jacq. (14). After further investigation Dr. Rusby is now of the opinion that *E. Novagranatense* is distinct from *E. carthagenense*.

Holmes states that the identity of *E. Novagranatense* and *E. carthagenense* might well be supported by the alterations in the shape, size and apex of the leaves of the Kew plant after five years' cultivation in Lazos but that it is better to retain a separate title until the identity is better proven (11).

Bolivian Coca.—Hartwich states that this commercial variety is from E. *Coca*, Lam. and these leaves are lanceolate, oval, ovate acuminate or obovate; up to 9.5 cm. and with vein ridge well marked (3).

According to Rusby this variety is from *E. Coca*, Lam. (14).

Holmes concludes that this article is from *E. Bolivianum*, Burck, and that the term *Huanuco* is synonymous with *Bolivian* (2).

Holmes describes the leaves of Bolivian or Huanuco coca as 3.5 to 7 cm. in length; 2.5 to 3.5 cm. in width; brownish green; oval; entire; glabrous; with a distinct ridge above the midrib on the upper surface; curved lines on the lower surface; the midrib prolonged into an apiculus which is frequently broken off in handling (4).

Peruvian Coca.—Hartwich states that this is from *E. Spruceanum*, Burck. He describes these leaves as more uniform in size and shape (than Bolivian) and with the vein ridge not as prominent (as Bolivian) (3).

Holmes holds that this is identical with the Truxillo variety and is from *E. Novagranatense*, Mor. (2). He also describes these leaves as smaller, narrower and more fragile (than Bolivian); with no ridge on the upper surface of the midrib; 4.5 by 2 cm. and with areolae (lines) not distinct (4).

Truxillo Coca.—Rusby states that Truxillo coca cultivated in British possessions is from *E. Novagranatense* but that the Truxillo leaves in American markets are from *E. Truxillense* (14).

Holmes places all Truxillo leaves as from *E. Novagranatense* (2), (4), but later adopts Rusby's title of *E. Truxillense* (11).

Java Coca.—Holmes concludes that this is from *E. Spruceanum*, Burck (2). He also states that this variety differs from Bolivian leaves in being paler green and tapering more to the apex and from Peruvian leaves in not showing the ridge over the midrib and tapering less to the base (4).

Burck holds that this variety is not intermediate in form between *E. Coca* and *E. Novagranatense* as claimed by Dyer and proposes the title *E. Coca* var. *Spruceanum* because of its agreement, as determined by Dyer, with Spruce's specimens from Rio Negro (13). He also holds that these leaves differ from those of *E. Novagranatense* by being broadest at the center, tapering less below and in not having an emarginate apex (7).

Trimen states that this variety is from intermediate forms classed provisionally as *E. Bolivianum* but with narrow, oblong, pointed leaves, dark green above and glaucous below (9).

Indian and Ceylon Coca.—Holmes concludes that these varieties are from *E. Spruceanum*, Burck (2) but later states that the Ceylon is usually the Bolivian variety (4).

Trimen states that all plants grown in Ceylon are from the Kew plant (*E. Novagranatense*) but differ from this in having leaf characters typical of the Peruvian variety (9).

MORPHOLOGICAL CHARACTERS OF ERYTHROXYLON LEAVES.

Bearing in mind the diversity of opinions as shown by the preceding citations we turn to brief descriptions of the leaves of the series of specimens at hand. These materials represent one or more specimens of various species of Erythroxylon, as follows:

Erythroxylon	Coca, Lam.	4	specimens
"	Novagranatense, Mor.	2	"
"	Truxillense, Rusby	3	"
"	Spruceanum, Peyr.	1	"
"	carthagenense, Jacq.	1	"
"	subracemosum, Turcz	1	"
"	pauciflorum, Rusby	2	"
"	Bangii, Rusby	2	"
"	cumanense, H. B. & K.	1	"
"	Popayanense, H. B. & K.	2	"
"	areolatum, Linn.	5	"
"	anguifugum, Mart.	7	"
"	brevipes, DC.	2	"
"	Urbanii, O. E. Schulz	1	"
"	havanense, Jacq.	2	"
"	minutifolium, Griseb.	1	"
"	alaternifolium, A. Rich	1	"
"	obovatum, Macfad.	2	"
"	Pelletierianum, A. St. Hil.	1	"
"	nitidum, Spreng.	1	"
"	Columbianum, Mart.	1	"
"	orinocense, H. B. & K.	1	"
"	unidentified or uncertain	5	"

These specimens were obtained from the following sources: The Herbarium and Drug Museum of the School of Pharmacy, Columbia University; the Herbarium and Economic Collection of the New York Botanical Garden and from Dr. H. H. Rusby. The identity of all material was checked by Dr. Rusby, attention was restricted to mature leaves and in instances of doubtful determination this fact has been stated in connection with the description. It must be borne in mind that size and color are variable characters, therefore variations in size have been stated where the amount of material was sufficient for this purpose. In stating colors of these leaves the color standards and terms of Ridgway (18) have been followed. This is perhaps a departure from the usual terminology but I believe there is a real necessity for more exactness in color nomenclature, especially in pharmacognostic work. Ridgway's standards are rather extensive for botanical use, but a

simplified form of these or a standard color chart would go far toward doing away with expressions like "light greenish brown," "ochraceous," "dark greenish brown" and a multitude of others which are so indefinite that no two individuals will agree as to the color meant.

Erythroxylon Coca, Lam. (wild growing).—(Plate I, Nos. 1–2.) This specimen is from the Herbarium of Columbia University, School of Pharmacy. The material was collected by Dr. Rusby near Yungas, Bolivia, at an altitude of 6000 feet, in 1885. The exact history is unknown but Dr. Rusby states that it was obtained on the upper Rio Negro from a number of plants having the same general habit and showing similarities to both *E. Coca* and *E. anguifugum.* This statement is borne out by the acuminate apex similar to *anguifugum* and the traces of lateral lines characteristic of *Coca.* The leaves are obovate to oval; range from 95 to 45 mm. in length and from 35 to 18 mm. in width; apex acute to acuminate and with an apiculus but slightly less prominent than that of *E. Coca;* base acute to cuneate; mars brown on upper surface; argus brown on lower surface; thin; the two sides of the leaf being markedly unequal.

A second specimen (Plate I, No. 2) submitted by Dr. Rusby as representing a wild growing *E. Coca,* Lam., was found to show a fair degree of agreement with the leaf described above. This leaf is oval elliptical; 60 to 25 mm. in length; 29 to 12 mm. in width; apex acute; apiculus present; base acute; upper surface sepia; lower surface snuff brown; membranous; veins not prominent; lateral lines apparent on but few leaves; midvein slightly one side of the central part of lamina.

Rusby has noted (14, 19), the modifying effects of cultivation and exposure on various species of Erythroxylon and these specimens would agree, at least in part, with his conclusions. The upper surface is much darker and more lustrous than the cultivated plant. The lower surface, while of lighter color than the upper, is much darker than any of the cultivated varieties and the venation is strong. The lateral lines are more obscure and the apex is more pointed. The single point of disagreement with his conclusions is that the leaves of one of these specimens are thinner than the cultivated *E. Coca,* measuring but 126 microns, whereas the latter averages 150 microns. On the other hand the second specimen closely approximates the cultivated article in this respect, being 157 microns in thickness.

Erythroxylon Coca, Lam.—(Plate I, Nos. 3–4). This material is from type specimens in the Herbarium of Columbia University, School of Pharmacy, collected by A. Miguel Bang near Yungas, Bolivia, in 1890 ("Plantae Bolivianae," No. 268). These leaves range from broadly elliptical to broadly obovate; 39 to 24 mm. in length; 19 to 12 mm. in width; apex acute and occasionally obtuse; apiculus prominent; base acute; upper surface Saccardo olive; lower surface buffy citrine; membranous in texture; lateral lines prominent; veins prominent on upper surface, those of lower surface more prominent outside the lateral lines than between these structures and the midrib; midvein centrally located or very nearly so. Examination of a five-pound sample Huanuco Coca leaves from the drug stock of the school shows that many of the leaves are larger than those of this herbarium specimen.

The figure (Fig. 1) accompanying an abstract of Dr. Burck's article in *Teysmannia* as it appears in (*Pharm. Jour. and Trans.*) p. 817 (April 2, 1892), shows the leaves of this plant as ovate-lanceolate, whereas all specimens at hand are broadly elliptical to obovate.

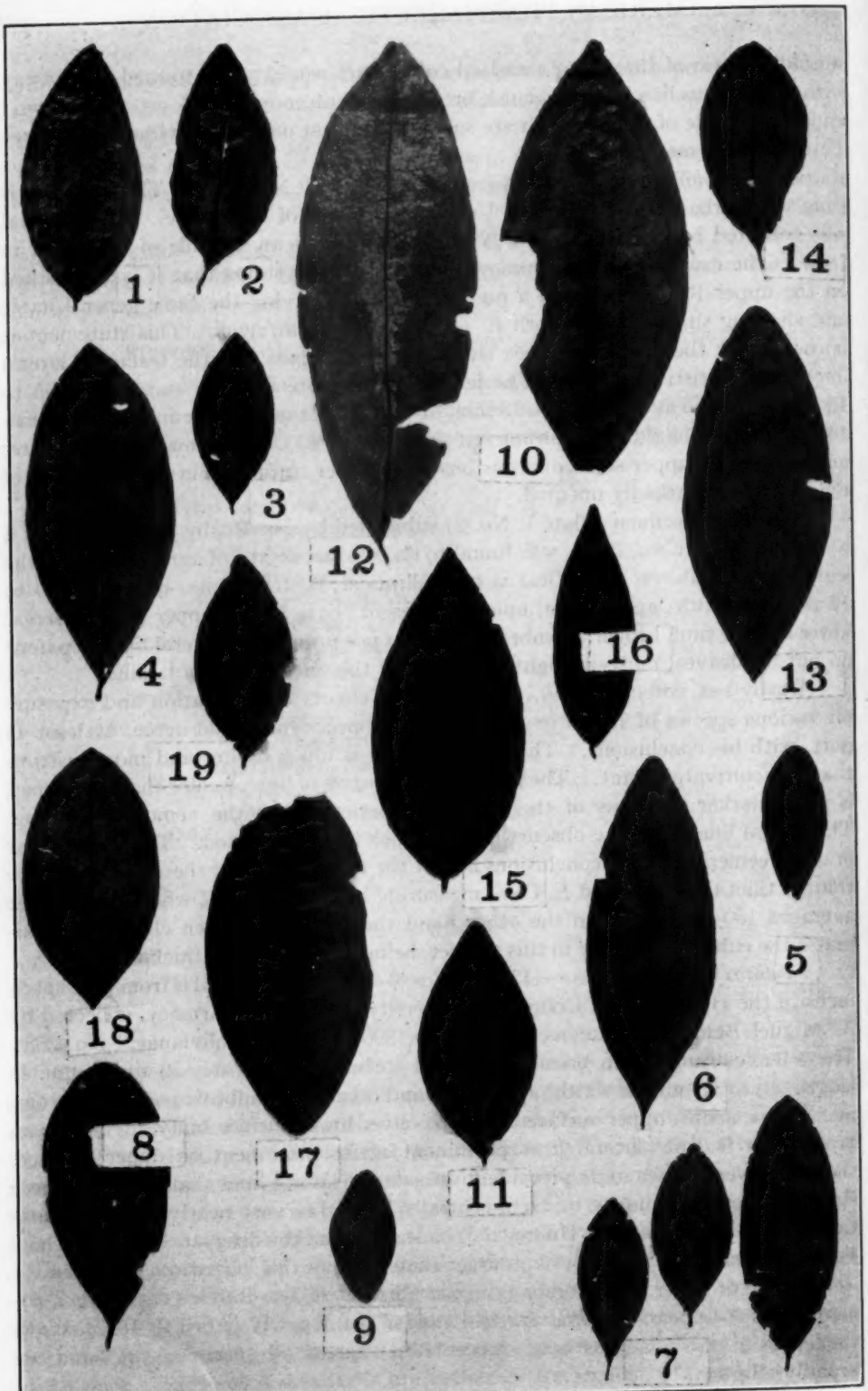


Plate I.

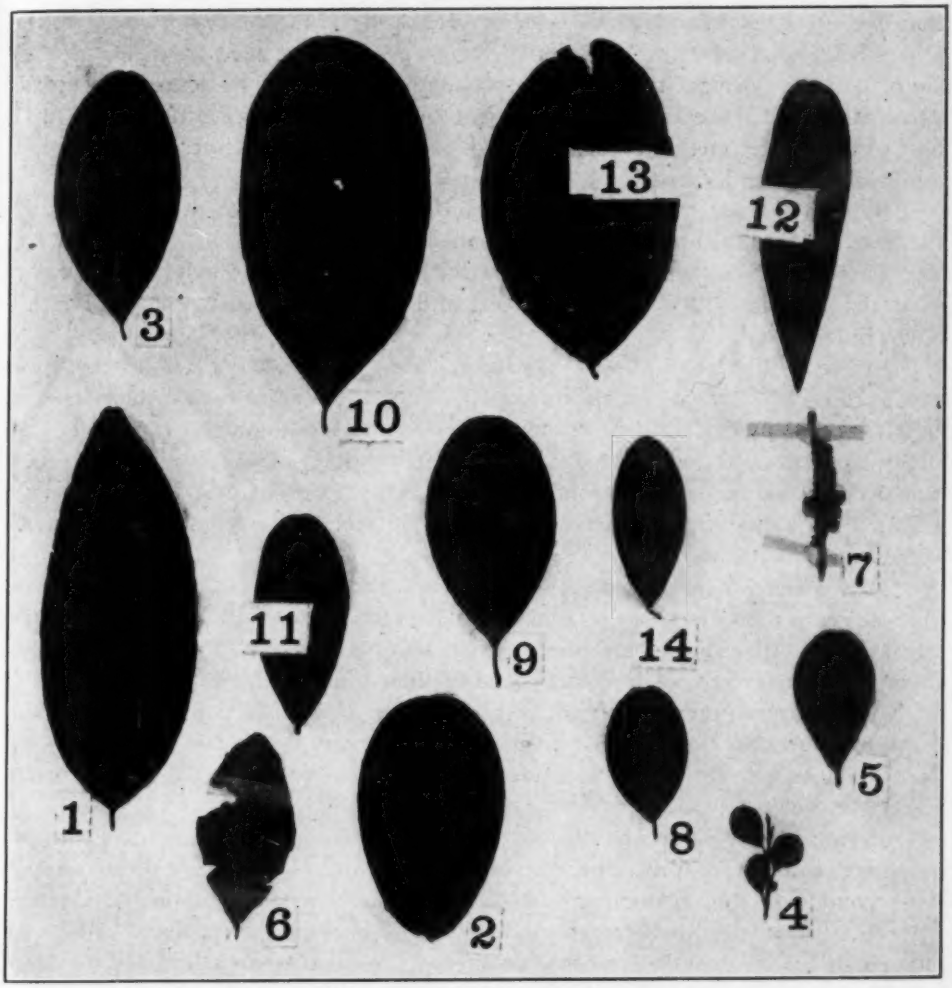


Plate II.

Plate I.—1–2, *E. Coca* (wild); 3–4, *E. Coca* (cultivated); 5–6, *E. Coca var. Novagranatense;* 7, *E. Truxillense;* 8, *E. carthagenense;* 9, *E. subracemosum;* 10, *E. pauciflorum;* 11, *E. cumanense;* 12, *E. popayenense;* 13, *E,* wild growing, identity not known; 14, *E. areolatum* (Type C); 15–16, *E. anguifugum;* 17, *E. Columbianum;* 18, *E. "Haya;"* 19, *E.* wild growing, identity not known.

Plate II.—1, *E. Spruceanum;* 2, *E. Bangii;* 3, *E. areolatum* (Type A); 4, *E. brevipes;* 5, *E. Urbanii;* 6, *E. havanense;* 7, *E. minutifolium;* 8, *E. alaternifolium;* 9, *E. obovatum;* 10, *E. areolatum* (Type B); 11, *E. Pelletieranum;* 12, *E. nitidum;* 13, *E. orinocense;* 14, *E. obovatum.*

The leaves of this species at my disposal agree with the illustrations of *E. Coca*, var. *Bolivianum*, Burck, and support Rusby's idea (14) that var. *Bolivianum* is identical with *E. Coca*, Lam.

Erythroxylon Novagranatense (*Morris*) *Hieron.*—(Plate I, Nos. 5–6). Two specimens of this material were obtained from the New York Botanical Garden. One of these is a type specimen. The only differences in these two specimens are

that one of the leaves of the type specimen tends slightly toward obovate form, the others being oval; also the leaves of the type specimen are smaller. These leaves are oval; 86 to 40 mm. in length; 31 to 15 mm. in width; apex acute to rounded; apiculus present; base acute; upper surface buffy citrine; lower surface dark olive buff to olive lake; membranous; veins not prominent; lateral lines not apparent; midvein centrally located.

Neither of these specimens show oblanceolate leaves as noted by Holmes (2), the nearest being the obovate form mentioned above.

These specimens agree in all points with the description of Ceylon grown leaves as stated by Trimen (9) but differ in form and apex from those figured by Bentley and Trimen (12).

Reference to Plate I, Nos. 3–4, will show that this leaf is entirely distinct from Huanuco coca (*E. Coca*) as known in this country and Holmes' deduction (13) that the Kew plant (*E. Novagranatense*) represents the Huanuco variety of the present day does not appear to be substantiated. It would appear that although this Kew plant was grown from Huanuco seed, environmental influences have resulted in modification to such an extent as to produce a plant so different as to constitute a new species.

It is admitted that Holmes' statement (2) that the Truxillo leaves are from this species is supported by a great similarity in form between them, but the Truxillo leaves of this market are almost invariably sharp pointed at base and apex whereas my specimens of *E. Novagranatense* show rounded apex.

The figure accompanying an abstract of Dr. Burck's article in *Teysmannia* (*Pharm. Jour. and Trans.*) p. 818 (April 2, 1892), shows these leaves as tending toward oblanceolate form with a decided mucronate apex in which appears a prominent apiculus.

Erythroxylon Truxillense, Rusby.—(Plate I, No. 7.) Several samples of this species were obtained from the Drug Museum of Columbia University College of Pharmacy and from the Economic Collection at the New York Botanical Garden. Although these specimens represented collections in South America and Ceylon, all agreed in histological and gross characters. The leaves are elliptical to rarely obovate; 60 to 25 mm. in length; 21 to 13 mm. in width; apex acute and with prominent apiculus; base acute; upper surface buffy citrine; lower surface dull citrine; membranous; veins not prominent; marked lateral lines appear in many leaves but an equal if not a greater number show these structures very faintly if at all; the midvein is centrally located.

Although the leaves of *E. Truxillense* and *E. Novagranatense* show great similarity as noted by Holmes (2, 4, 11) the leaves of the former species in the great majority of instances are of elliptical form, obovate leaves being rare, whereas those of *E. Novagranatense* show a rounding of the apex and as a rule are much larger.

Holmes (11) in illustrating this species adopts the name *E. Truxillense* instead of *E. Spruceanum*, Burck.

Erythroxylon Spruceanum, Peyr.—(Plate II, No. 1.) Two leaves of this species were obtained from the New York Botanical Garden and according to Dr. Rusby these are from a type specimen bearing the original label of Dr. Spruce. These leaves are oval to obovate; 88 to 70 mm. in length; 34 to 28 mm. in width;

apex acute and retuse; apiculus absent; base acute to obtuse; upper surface Saccardo umber; lower surface Brussels brown; subcoriaceous; veins prominent and raised above the leaf surface; lateral lines not apparent; midvein centrally located.

This specimen agrees with Holmes' statement (2) in having lanceolate leaves and with Dyer's notations (7) regarding leaf form and apex as contrasted with *E. Novagranatense* and *E. Coca*. It differs from the description of Burck (7) as applied to *E. Coca* var. *Spruceanum*, Burck, in not showing an excurrent point at the apex; in being lanceolate instead of oval; in not tapering into the leaf stalk and in not showing lateral lines on the under surface. It differs from Holmes' notation (10) referring to *E. Spruceanum*, Peyr. in that these leaves are entirely different in type from *E. Coca*.

The figure accompanying an abstract (*Pharm. Jour. and Trans.*) p. 818 (April 2, 1892), of Dr. Burck's article in *Teysmannia* shows *E. Coca* var. *Spruceanum*, Burck, with a distinct apiculus and with lateral lines, notwithstanding his description.

Erythroxylon carthagenense, Jacq.—(Plate I, No. 8.) This is a type specimen and was obtained from the New York Botanical Garden. As but a single leaf was available the central portion had to be used for the histological study, hence the illustration shows a portion removed. Leaves are obovate; 63 mm. long and 30 mm. wide; apex rounded and with prominent apiculus; base is acute; upper surface sepia; lower surface Saccardo umber; subcoriaceous; veins not prominent; lateral lines apparent on both surfaces and very marked; midvein slightly out of center.

Erythroxylon subracemosum, Turcz.—(Plate I, No. 9.) A small specimen of the leaves of this species was furnished by Dr. H. H. Rusby. This material was collected at Yungas, Bolivia, altitude 6000 feet, 1885, and regarded in this vicinity as *E. Coca* escaped from cultivation. This leaf is oval; 30 mm. in length; 16 mm. in width; apex acute and without apiculus; base obtuse and slightly unequal; olive citrine on upper surface; snuff brown on lower surface; thin to subcoriaceous; the two sides of the leaf being slightly unequal.

Erythroxylon pauciflorum, Rusby.—(Plate I, No. 10.) Two specimens of this species were examined. The first was furnished by Dr. Rusby and represents the type specimen used by him in his determination of the species. The second was obtained from the Herbarium of the New York Botanical Garden. In general appearance these samples were identical. These leaves are broadly oval, 110 mm. in length, 45 to 59 mm. in width, acuminate, base acute to obtuse, upper surface buffy olive, lower surface Saccardo olive or light brownish olive, coriaceous, areolae or lateral lines not apparent, veins very prominent, the two sides of the leaf being nearly equal.

Erythroxylon Bangii, Rusby.—(Plate II, No. 2.) This material is from type specimens in the Herbarium of Columbia University, School of Pharmacy, collected by A. Miguel Bang near Songo, Bolivia, in November, 1890 ("Plantae Bolivianae," No. 843). A few of the leaves are broadly oval but the majority, although broad, are distinctly obovate; 75 to 45 mm. in length; 40 to 21 mm. in width; apex rounded to obtuse, in some leaves appearing retuse because of a tendency of the apiculus to bend backward carrying with it a small portion of the leaf apex, in which case the prominent apiculus can only be seen when viewing the under side of the leaf; base rounded to obtuse; upper surface argus brown; lower surface

amber brown; coriaceous; veins, aside from primary, not prominent; lateral lines not apparent but many leaves show a slight impression on each side of the midrib; both sides of the lamina are equal.

Erythroxylon cumanense, H. B. & K.—(Plate I, No. 11.) This specimen was obtained from Dr. Rusby and represents material collected by him on the Mulford Biological Exploration of the Amazon Basin. Specimen was collected at San Buena Ventura, in the vicinity of Rurrenabaque, Bolivia, at an altitude of 1000 feet, on December 1, 1921. There is considerable variation in the shape of these leaves and a single branch bears ovate, obovate and a few of elliptical form. Leaves are 62 to 30 mm. in length and 29 to 14 mm. in width; apex acute to acuminate; apiculus small; base rounded to acute; upper surface Roman green; lower surface serpentine green; membranous texture, veins not prominent; a few of the leaves show an alteration of tissue in the form of a brown ridge extending parallel with the midvein, but definite lateral lines or areolae are not apparent; in the larger leaves there is a slight inequality in the halves of the lamina.

Erythroxylon Popayanense, H. B. & K.—(Plate I, No. 12.) This specimen is from the lower Orinoco and was collected by Dr. Rusby in 1896. The leaves are oval to elliptical; average length 80 mm.; average width 38 mm.; apex acute, with small but distinct apiculus; base acute; upper surface olive green; lower surface serpentine green; of membranous texture; veins prominent on both surfaces; lateral lines not apparent but lower surface shows a narrow area on each side of the midrib which differs slightly but perceptibly from the general leaf surface in that it is lighter in color and is depressed; midvein is centrally located.

Erythroxylon areolatum, Linn.—Specimens of this species were obtained from the Drug Museum and Herbarium of Columbia University, College of Pharmacy, from the New York Botanical Garden collections and from Dr. Rusby. All of these materials are noted as from West Indian sources. Of the four specimens examined, two are identical both in histological and gross characters. The remaining specimens are so different from the preceding and from each other as to create doubts regarding their authenticity. For this reason separate descriptions follow.

Type A.—(Plate II, No. 3.) The leaves are obovate to broadly elliptical; 95 to 50 mm. in length; 40 to 26 mm. in width; apex rounded to obtuse and slightly retuse; apiculus slight; base acute to obtuse; upper surface mottled in reds, browns and greens; lower surface wood brown; membranous; veins more prominent on upper surface; lateral lines well marked in most leaves; midvein central or very slightly to one side.

Type B.—(Plate II, No. 10.) This specimen is from the Herbarium of Columbia University, College of Pharmacy, and bears label "Plantae Cubenses Wrightianae, No. 2140, E. obovatum, collected by C. Wright, 1860–64." Although this specimen is identified as *E. obovatum* it is quite different in both gross and histological characters from other specimens of this species. Two possibilities present themselves. Either the botanical identification is incorrect or, if it is correct, the differences are due to environmental influences similar to those noted by Dr. Rusby in several South American species (14). Upon submitting the specimen to Dr. Rusby for his opinion, I am assured that the labeling is incorrect and that this is *E. areolatum*. These leaves are broadly oval to obovate; 72 to 46 mm. in length; 42 to 29 mm. in width; apex blunt or rounded; apiculus minute; base acute; upper

surface Saccardo umber; lower surface cinnamon brown; membranous; veins not prominent; lateral lines not apparent; midvein central or but slightly toward one side of lamina.

Type C.—(Plate I, No. 14.) This specimen was furnished by Dr. Rusby and marked by him as from the West Indies. The leaves are obovate; 60 to 35 mm. in length; 32 to 17 mm. in width; apex rounded to obtuse with broad apiculus; base acute; upper surface buffy citrine; lower surface brownish olive; of membranous texture; venation not prominent; lateral lines well marked; midvein centrally located.

Because of the manifest differences in morphological and histological characters between this specimen and the two preceding, Dr. Rusby inclines to the view that there may be two forms of *E. areolatum*.

Erythroxylon anguifugum, Mart.—(Plate I, Nos. 15–16.) This specimen was collected November 4, 1921, by Dr. Rusby on the Mulford Exploration and is from small trees with white flowers growing in forest near Lake Rogague, Bolivia. The leaves are broadly oval to ovate; 120 to 65 mm. in length; 51 to 29 mm. in width; apex acute to attenuate; apiculus small; base rounded to obtuse; upper surface brownish orange; lower surface citrine; texture subcoriaceous; veins very prominent on both surfaces; lateral lines not apparent; midvein located centrally in lamina.

A second specimen, consisting of a single leaf from the original type specimen of Martius at the New York Botanical Garden, was examined and found to agree substantially in general and histological characters with the above material except that it was much thicker (Rusby specimen 150 microns; type specimen 252 microns). This leaf is lancovate; 58 mm. length, 19 mm. width; apex attenuate and with slight apiculus; Brussels brown in color. In other respects it agrees with the Rusby specimen.

Erythroxylon brevipes, D. C.—(Plate II, No. 4.) Two specimens of this material were examined. One from Porto Rico bearing legend "Manati, ad lagunam Fortuguero; 12-IV-1887; det. I. Urban; P. Sintenis: Plantae Portoricenses; 6647." The other collected in Cuba by C. Wright, 1860–64 ("Plantae Cubenses Wrightianae," No. 2134). The leaves are oval to obovate; 17 to 4 mm. in length; 8 to 7 mm. in width, the leaves of the Porto Rico specimen being the larger; apex rounded and with a slight apiculus; base acute; upper surface light brownish olive; lower surface Savoy brown; texture membranous; veins not prominent; lateral lines wanting; in general the midvein in the Porto Rico specimen is centrally located while in the Cuban sample this is not the case.

Erythroxylon Urbanii, O. E. Schulz.—(Plate II, No. 5.) This specimen is from the Herbarium of Columbia University, College of Pharmacy, and is labeled "P. Sintenis; Plantae Portoricenses; Manati, ad Rio saliente arriba; 9-IV-1887; Erythroxylon obtusum, D. C. 6613; det. I. Urban." Although this specimen is labeled *E. obtusum*, Dr. Rusby finds this determination incorrect and it is his opinion that it is *E. Urbanii*, being a cotype of the specimen in the New York Botanical Garden Herbarium. The leaves are obovate; 37 to 15 mm. in length; 20 to 10 mm. in width; apex rounded, obtuse and retuse; apiculus not apparent; base acute; both surfaces argus brown in color; texture coriaceous; veins prominent on both surfaces; lateral lines not apparent; one side of the lamina broader than the other.

Erythroxylon havanense, Jacq.—(Plate II, No. 6). This specimen is from the Herbarium of Columbia University, College of Pharmacy, and although no collection data appears on the label it is probably of Cuban origin as it bears the following notation: "Cuban name jiba; San Fernando, May, 1841." This specimen was originally labeled as *E. obtusum*, but Dr. Rusby finds it to be *E. havanense*. The leaves of the specimen are very thin and it has not been carefully mounted. These leaves are oval to elliptical; 34 to 19 mm. in length; 17 to 6 mm. in width; apex blunt to rounded; apiculus slight; base acute to cuneate; both surfaces grayish olive; extremely membranous in texture; veins not prominent; lateral lines not apparent; midvein centrally located.

According to the Kew Index, *E. havanense*, Jacq., is synonymous with *E. ovatum*.

Erythroxylon minutifolium, Griseb.—(Plate II, No. 7.) This specimen is from the Herbarium of Columbia University, College of Pharmacy, and was collected by C. Wright, 1860–64 ("Plantae Cubenses Wrightianae," No. 2133). These leaves are round; 4 to 2 mm. in diameter; apex emarginate; apiculus wanting; base rounded; upper surface olive brown and glossy; lower surface Brussels brown; extremely coriaceous in texture; veins more prominent on upper surface; lateral lines not apparent; midvein centrally placed.

These leaves are different in habit from any of the other species examined, being so crowded on the stems as to fairly cover the latter.

Erythroxylon alaternifolium, Rich.—(Plate II, No. 8.) This specimen is from the Herbarium of Columbia University, College of Pharmacy, and was collected by C. Wright, 1865 ("Plantae Cubenses Wrightianae," No. 344), from a spreading bush six feet in height, on the banks of a stream in the pine woods. The leaves are broadly oval to obovate; 40 to 24 mm. in length; 13 to 7 mm. in width; apex rounded and retuse; small apiculus apparent in most leaves; base acute to rounded; upper surface argus brown; lower surface mars brown; coriaceous; veins more prominent in smaller leaves; lateral lines wanting; sides of lamina unequal with reference to midvein.

This herbarium sheet also shows a branch with smaller obovate leaves not exceeding 17 mm. in length and 8 mm. in width; with cuneate base; apiculus present; dark green upper surface; olive green lower surface; membranous; without lateral lines; midvein centrally placed.

Erythroxylon obovatum, Macf.—(Plate II, No. 9.) Two specimens from the Herbarium of Columbia University, College of Pharmacy, were examined. One of these is labeled "Plantae Cubenses Wrightianae, No. 2141, collected by C. Wright, 1860–64." The other is presumably also of Cuban origin, because of a notation stating the vernacular name "jiba" and the medicinal use of the root. The leaves of these two specimens are identical both in gross and histological characters. Leaves are obovate; 60 to 30 mm. in length; 26 to 15 mm. in width; apex rounded and occasionally slightly retuse; apiculus prominent; base mostly acute, may be obtuse in very broad leaves; upper surface mummy brown; lower surface russet; membranous; veins not prominent on either surface; lateral lines not apparent; the midrib is located centrally.

Erythroxylon Pelletierianum, A. St. Hil.—(Plate II, No. 11.) A single leaf was obtained from the type specimen at the New York Botanical Garden. A

portion of the leaf shown in the illustration had to be used for histological study. The leaf is 45 mm. in length and 21 mm. in width; obovate; apex rounded and slightly retuse; apiculus not apparent; base acute; upper surface mummy brown; lower surface pecan brown; coriaceous; veins more prominent on lower surface; lateral lines not apparent; the midvein is slightly to one side of the center of the lamina.

Erythroxylon nitidum, Spreng.—(Plate II, No. 12.) A single leaf was obtained from the type specimen at the New York Botanical Garden and a portion of this leaf was used for histological study. The leaf is 67 mm. in length and 19 mm. in width; oblanceolate; apex rounded and possibly slightly retuse; apiculus present but very small; base cuneate; upper surface Vandyke brown; lower surface Rood's brown; membranous; veins not prominent; lateral lines not apparent; midvein slightly out of center.

Erythroxylon Columbianum, Mart.—(Plate I, No. 17.) Two leaves were obtained from the type specimen at the New York Botanical Garden. These leaves are oval elliptical; the larger being 85 by 41 mm., the other 62 by 27 mm.; apex acute; apiculus not apparent; base broadly acute; upper surface Saccardo umber; lower surface walnut brown; coriaceous; veins very prominent on lower surface; lateral lines not apparent; midvein slightly out of center.

Erythroxylon orinocense, H. B. &. K.—(Plate II, No. 13.) This material was obtained from a type specimen at the New York Botanical Garden. These leaves are broadly oval; average 72 mm. in length and 40 mm. in width; apex acute to rounded; apiculus very slight; base obtuse to rounded; upper surface Saccardo olive; lower surface olive lake; subcoriaceous; veins prominent on lower surface and impressed on upper; lateral lines not apparent; midvein slightly out of center.

"Haya" Coca.—(Plate I, No. 18.) This sample is from the Economic Collection of the New York Botanical Garden and is of Colombian origin. The leaves are broadly oval to elliptical; 63 to 33 mm. in length; 32 to 18 mm. in width; apex obtuse with distinct apiculus; base obtuse; upper surface dull citrine; lower surface olive lake; subcoriaceous; veins not prominent; lateral lines not apparent; midvein centrally located.

The histological characters would indicate that this material is a variety of *E. Coca*, Lam., thus supporting Rusby's views (14).

"Wild" Coca.—(Plate I, No. 19.) This sample is from the Economic Collection of the New York Botanical Garden. Dr. Rusby informs me that this specimen was collected in Curacoa, at an altitude of 5000–6000 feet, from plants growing around the edges of coca plantations. The shrubs appear similar to the cultivated plants occurring in abandoned plantations. The natives believe that this represents the cultivated plant run wild.

The leaves are oval to elliptical; 63 to 30 mm. in length; 32 to 14 mm. in width; apex acute to obtuse and with slight apiculus; base obtuse; upper surface dark olive; lower surface mummy brown; membranous; veins not prominent; lateral lines not apparent; midvein centrally located.

"Wild" Coca.—(Plate I, No. 13.) This specimen was furnished by Dr. Rusby and represents material collected by Dr. O. E. White on the Mulford Exploration in the vicinity of Rurrenabaque, Bolivia, December 10, 1921. Dr. Rusby states that this leaf is from plants grown in the shade. These leaves are

TABLE I.—SUMMARY OF MORPHOLOGICAL CHARACTERS.

	Form.									Apex.					Base.			Lateral lines.	Size.		
	Elliptical.	Oval.	Obovate.	Broadly oval.	Ovate.	Round.	Acute.	Acuminate.	Obtuse-rounded.	Attenuate.	Retuse.	Emarginate.	Acute.	Obtuse-rounded.	Cuneate.	Apiculus.		Length, maximum.	Width, maximum.	Minimum.
E. Coca (wild)	+	+	+				+		+				+			+	#	60	29	12
E. Coca (wild)	+	+	+				+		+				+			+	#	95	35	18
E. Coca (cult.)	+	+	+				+		+				+			+	+	39	19	12
E. Coca (cult. Huanuco)		+	+				+		+				+			+	+	48	22	10
E. subracemosum				+				+						+				30	16	:
E. pauciflorum					+									+		+		110	45	:
E. Bangii		+	+				+		+				+			+		75	40	21
E. cumanense					+		+		+				+			#		62	29	14
E. popayenense		+	+				+		+		+		+			#		80	38	:
E. areolatum				+			+		+				+			+		60	32	17
E. areolatum		+	+				+		+		+		+			+	+	95	40	21
E. areolatum		+	+				+		+				+			1		72	42	29
E. anguifugum					+		+		+	+			+			#		120	51	19
E. brevipes			+				+		+				#	+		#		17	8	6
E. Urbanii			+				+		+				#			+		37	20	10
E. havanense		+	+				+		+		+		+			+		34	17	6
E. minutifolium		+	+				+		+				+			+		4	4	2
E. alaternifolium			+			+												40	24	7
E. obovatum		+	+				+		+		+		#	++		#		60	26	15
E. Truxillense							+		+				+			+		60	21	13
E. carthagenense											+		+		+	#		60	30	:
E. Pelletierianum			+						+				+			+		45	21	:
E. nitidum			oblanceolate												+			67	19	:
E. Columbianum		+	+				+		+				+			#		85	41	27
E. Novagranatense			+	+					+		+		+	+		+		86	31	15
E. orinocense		+	+				+		+				+			+		72	43	37
E. Spruceanum		+	+				+		+				+			+		88	34	28
E. "Haya"		+					+		+				+			+		63	32	18
E. wild (unidentified)		+					+		+				+			+		117	50	35
E. wild (unidentified)		+					+		+				+			+		63	32	14

oval; 117 to 90 mm. in length; 50 to 35 mm. in width; apex obtuse to rounded; apiculus slight; base obtuse to acute; upper surface light yellowish olive; lower surface olive green; of membranous texture; lateral lines well marked; halves of lamina equal; veins very prominent on both surfaces.

It is noteworthy that coca is not cultivated in this vicinity and the occurrence of plants in this locality is possibly due to transportation of the seeds, either by birds or water, from distant coca plantations. The natives regard this plant as a wild growing coca.

SUMMARY.

The salient points of the preceding descriptions are summarized in tabular form as Table 1, page 358. Although variations in general characters of the leaf are to be expected, we may make use of the following characters with reasonable assurance in identification work:

1. The presence or absence of areolae or lateral lines.
2. The presence or absence of an apiculus or short projection of the midvein beyond the lamina.
3. The texture of the lamina.
4. The form of the leaf.
5. The type of apex.
6. The type of base.
7. The position of the midvein (equilateral or inequilateral).

(*To be continued*)

THE EFFECT OF CERTAIN AMIDES ON THE STABILITY OF MODIFIED DAKIN'S SOLUTION.*

BY JOHN C. KRANTZ, JR., AND MANUEL J. VIDAL.[1]

INTRODUCTION.

Since the introduction of the Surgical Solution of Chlorinated Soda into the Pharmacopœia, a great deal of investigation has been carried out with the purpose of finding a preservative for this solution. Becker[2] has studied the stability of the solution at various temperatures and Harrisson[3] has shown that certain compounds are capable of stabilizing the solution for long periods of time, even when employed in low concentrations.

The latter investigator claims saccharin to be an excellent preservative for the Modified Dakin's Solution and also suggests that the addition of saccharin does not alter the therapeutic value of the solution.

The purpose of this paper is to show that amides in general including saccharin do not stabilize Modified Dakin's Solution and to propose a theory to account for the reactivity of these products with sodium hypochlorite.

---

* Section on Practical Pharmacy and Dispensing, A. PH. A., Des Moines meeting, 1925.

[1] Technician in the Pharmacy Laboratory of the University of Maryland.

[2] Becker, JOUR. A. PH. A., 14, 192 (1925).

[3] Harrison, JOUR. A. PH. A., 13, 902 (1924).

EXPERIMENTAL.

Two liters of the hypochlorite solution were prepared by the sodium phosphate method using a chlorinated lime which assayed 29.25% of chlorine. The solution prepared met the alkalinity requirements for this product and assayed 0.483% of sodium hypochlorite. Quantities of 200 cc. of this solution were immediately transferred to amber-colored bottles and the following substances were added:

Solution No. 1	Control	No preservative		
Solution No. 2		Saccharin	M. p. 220.8° C.	0.5000 Gm.
Solution No. 3		Benzenesulphonamide	M. p. 156.0° C.	0.4280 Gm.
Solution No. 4		Benzamide	M. p. 130.0° C.	0.3305 Gm.
Solution No. 5		Acetamide	M. p. 82.0° C.	0.1615 Gm.

Using 0.25% of saccharin as a basis for calculation the other amides were added in molecular equivalent quantities. Graph No. 1 shows the rate of deterioration of these solutions expressed in cubic centimeters of tenth normal sodium thiosulphate solution required for titration of 10 cc. of the hypochlorite solution.

Thirteen cubic centimeters of thiosulphate solution is equivalent to 0.483% sodium hypochlorite.

These data demonstrate the deteriorating influence of these particular amides upon the stability of the hypochlorite solution. It will be observed that molecular equivalents of the amides produce practically the same reduction in the positive chlorine content of the solution.

After twenty-three days these solutions were extracted with chloroform and the residue yielded by evaporation of the chloroform was tested for positive chlorine, by the potassium iodide method. Negative results were obtained in all cases. The residue from the solution containing saccharin did not melt at 220.8° C. as did the saccharin employed, but blackened at 211° C.

Beilstein's test indicated the presence of chlorine, the compound was then dissolved in boiling metallic sodium and the resulting mass after appropriate treatment was dissolved in water acidified with nitric acid and filtered. Upon the addition of silver nitrate solution, the characteristic reaction of the chlorine ion was obtained, indicating that chlorine had entered the organic molecule.

Another sample of the Modified Dakin's Solution was prepared, which met the alkalinity requirements and contained 0.509% of sodium hypochlorite. One hundred cubic centimeter quantities of this solution were placed in amber-colored bottles and again their stability in the presence of saccharin was studied.

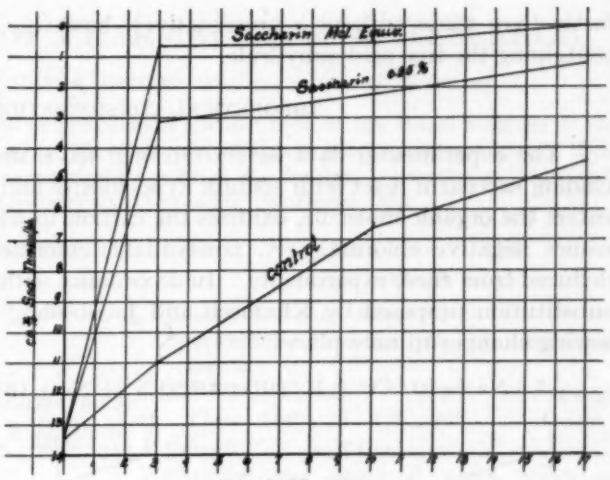
Solution No. 1	Control	No preservative
Solution No. 2	Saccharin	0.250 Gm.
Solution No. 3	Saccharin	1.252 Gm.

Solution No. 3 contained an amount of the amide chemically equivalent to the amount of sodium hypochlorite present, calculated upon the basis of a molecule of sodium hypochlorite for one molecule of saccharin. It is interesting to note that Solution No. 3 contained approximately 5 times as much of the amide as Solution No. 2. The following graph shows the deterioration of these solutions.

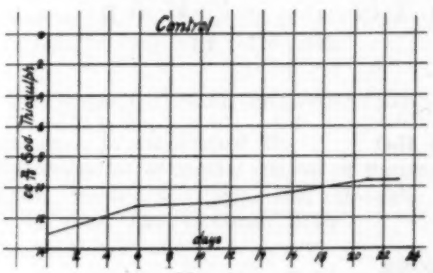
Thirteen and four-tenths cubic centimeters of sodium thiosulphate solution is equivalent to 0.509% of sodium hypochlorite.

Graph No. 2 indicates that the reduction of the positive chlorine content of the solution is a direct linear function of the quantity of saccharin present.

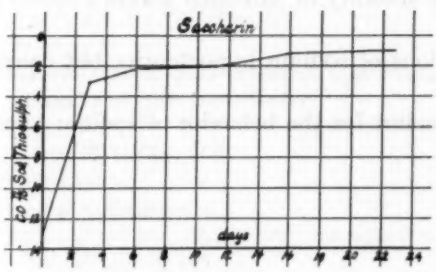
It is well known that when acid anhydrides of which saccharin is a type are dissolved in water, the hydrogen-ion concentration of water is abundantly increased, and as an increase in hydrogen-ion concentration rapidly causes the deterioration of hypochlorite solutions, it occurred to the authors that this might be responsible for the observed results. Accordingly hypochlorite solutions were prepared containing 0.25% of the sodium salt of benzosulphinide and in a similar manner their stability was determined. The solution containing this amount of the sodium salt of saccharin deteriorated quite rapidly (three times



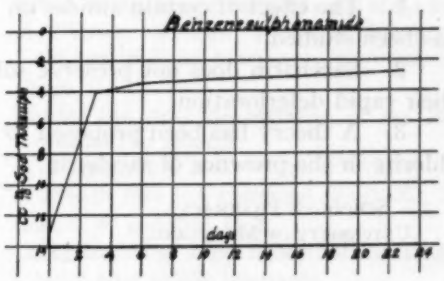
Graph No. 2.



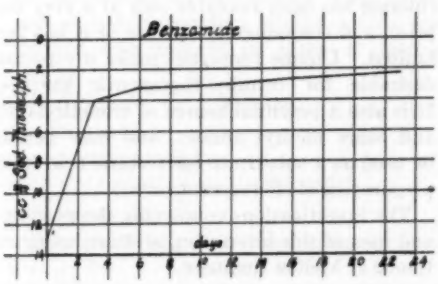
No. 1a.



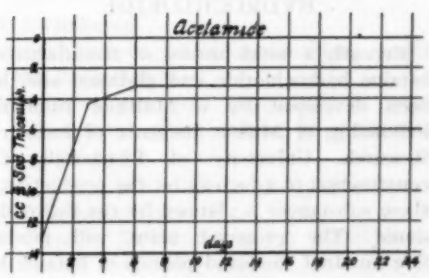
No. 1b.



No. 1d.



No. 1c.



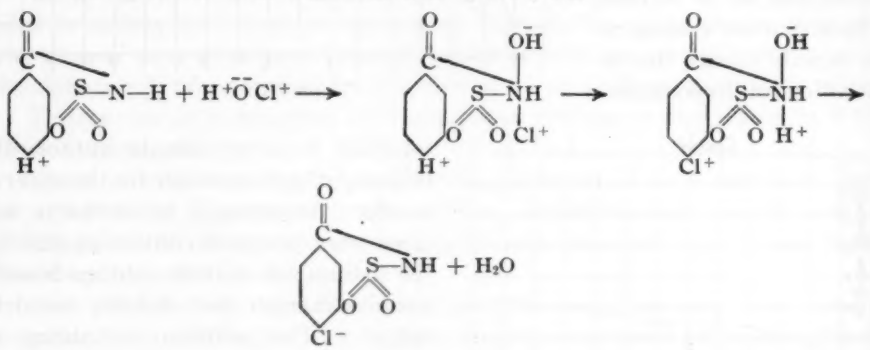
No. 1e.

faster than those without a preservative), however, not quite so rapidly as those containing the free acid anhydride.

THEORETICAL CONSIDERATIONS.

The experimental data herein outlined have shown that certain amides including saccharin react with sodium hypochlorite and that the chlorine ultimately enters the organic molecule, oxidizes the carbon to which it attaches itself and becomes negative chlorine, *i. e.*, nonavailable chlorine. These postulates may be deduced from these experiments. In accordance with the modern views of organic substitution proposed by Kharasch and Jacobsohn,[1] the authors assume the following changes to take place:

1. $Na^+ - {}^-O^- Cl^+ + H^+ OH \rightleftharpoons H^+ O\bar{\bar{C}}l^+ + Na + \bar{O}H$



CONCLUSIONS.

1. The effect of certain amides on the stability of Modified Dakin's Solution has been studied.

2. Saccharin does not preserve solutions of sodium hypochlorite but causes their rapid deterioration.

3. A theory has been proposed to account for the behavior of sodium hypochlorite in the presence of saccharin.

SCHOOL OF PHARMACY,
UNIVERSITY OF MARYLAND.

A NEW PROCESS OF MAKING BETAINE HYDROCHLORIDE.

Recently a novel process of manufacturing betaine hydrochloride and glutamic acid has been developed by a Multiple Industrial Fellowship of Mellon Institute of Industrial Research, University of Pittsburgh. The construction of a factory for the production of these substances is planned by the Fellowship donor. The proposed plant will produce five hundred thousand pounds of betaine hydrochloride annually. Heretofore this hydrochloride has been available only at a very high price, and consequently the use of it has been limited. Unique properties make it especially desirable for certain therapeutic purposes. It is also a potential source of trimethylamine and other methyl amines, and may perhaps be used as a substitute for tartaric acid in the preparation of effervescent salts.

The investigations concerning the properties and uses of this interesting acid are being continued at Mellon Institute.

---

[1] Kharasch-Jacobsohn, *J. Am. Chem. Soc.*, 43, 1894 (1921).

BIBLIOGRAPHY OF PHARMACEUTICAL RESEARCH

Compiled by A. G. DuMez, Reporter on the Progress of Pharmacy.

All articles in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK, which is issued annually. Those desiring abstracts immediately can obtain them for a fee of one dollar each by communicating with A. G. DuMez, University of Maryland, School of Pharmacy, N. E. Cor. Lombard and Greene Sts., Baltimore, Md.

APPARATUS AND MANIPULATIONS.

Hosking, J. R., and Short, W. F.
A new melting-point apparatus
Chem. Ind., 45 (1926), 89T

Roozendaal, N. A.
The filling of ampules with viscous fluids
Pharm. Tijdschr. Nederl. Indie., 2 (1925), 92; through *Pharm. Zentralh.*, 67 (1926), 137

Trevan, J. W.
Micrometer syringe
Biochem. J., 19, No. 6, p. 1111; through *Chem. & Drug.*, 104 (1926), 442.

PHARMACEUTICAL PREPARATIONS.

Gadamer, J., and Neuhoff, E.
Determination of alcohol content of tinctures
Chem. Zentr., I (1926), 189; through *J. Soc. Chem. Ind.*, 45 (1926), 214B

Griffin, E. L.
A suggested change in the official method of assay of cresol in liquor cresolis compositus
JOUR. A. PH. A., 15 (1926), 196

Gronberg, J.
Disintegration of pills prepared with "cenomassa" and other constituents
Pharm. Ztg., 71 (1926), 55; through *Chem. Abstr.*, 20 (1926), 1129

Knaffl-Lenz
Assay of anthelmintics
Pharm. Weekblad, 63, p. 199; through *Drug Circ.*, 70 (1926), 146

Kolthoff, I. M.
The microtitration of iodides with iodate and the determination of the iodide and ferrous iron content in syrup of ferrous iodide
JOUR. A. PH. A., 15 (1926), 164

Schnellbach, W.
A new vermin eradicator
Schweiz. Apoth. Ztg., 64 (1926), 135

Vahlteich, H. W.
Stability of official pepsin preparations
JOUR. A. PH. A., 15 (1926), 193.

PHARMACOLOGY AND THERAPEUTICS.

Baldes, E. J., and Adams, S. F.
Spectrophotometric analysis of commercial insulin
Am. J. Physiol., 74 (1925), 309; through *Chem. Abstr.*, 20 (1926), 966

Berardi, J. B., and Canan, M. C.
Chemical and biological assay of drugs. I. Cascara Sagrada
JOUR. A. PH. A., 15 (1926), 189

Buschke, A., and Peiser, B.
Toxicity of thallium salts
Klin. Wochschr., (Dec. 17, 1925); through *Chem. & Drug.*, 104 (1926), 450

Castrey, M. W., and Spencer, W. P.
Action of adrenaline on the temperature of the brain
Am. J. Physiol., 71 (1925), 507; through *Bull. sci. pharmacol.*, 33 (1926), 180

Coope, R.
Action of pituitrin on the fatty acids of the liver
J. Physiol., 59, Nos. 1 and 2 (1925), 69; through *Bull. sci. pharmacol.*, 33 (1926), 189

Coope, R.
Insulin and fatty degeneration of the liver produced by pituitrin
J. Physiol., 59, Nos. 1 and 2 (1925), 92; through *Bull. sci. pharmacol.*, 33 (1926), 189

Cori, C. F., and Cori, G. T.
Concentration of sugar in arterial and venous blood after insulin treatment
Am. J. Physiol., 71 (1925), 688; through *Bull. sci. pharmacol.*, 33 (1926), 179

de Myttenaere
Arsenobenzenes, their composition, toxicity and their control
Bull. acad. roy. méd. Belg., [5], 5 (1925), 433; through *Chem. Abstr.*, 20 (1926), 965

Fenn, W. O.
The active principles of the posterior lobe of the hypophysis
J. Physiol., 59, Nos. 4 and 5 (1924), Proc.; through *Bull. sci. pharmacol.*, 33 (1926), 186

Fleury, P.
Elimination of phenylethylalonyl urea
Répert. pharm., 37 (1926), 79

Huggelt, A. St. G., and Mellanby, J.
Action of adrenaline on the central nervous system
J. Physiol., 59, Nos. 4 and 5 (1924), 387; through *Bull. sci. pharmacol.*, 33 (1926), 181

Kay, H. D., and Smith, W.
Action of insulin on blood volume
J. Physiol., 59 (1925), Proc.; through *Bull. sci. pharmacol.*, 33 (1926), 191

Kodana, S.
Action of chloroformic anesthesia and intravenous injections of chloral on the adrenaline secretion of the adrenals
Tôhoku J. Exp. Med., 5, Nos. 2 and 3 (1924), 149; through *Bull. sci. pharmacol.*, 33 (1926), 191

Langecker, H., and Stross, W.
Measurement of the effect of insulin
Biochem. Z., 161 (1925), 295; through *Chem. Abstr.*, 20 (1926), 968

Lemay, P., and Jaloustre, L.
Comparison of toxicity and action of atropine and the total alkaloids of belladonna
Bull. Acad. Méd. Ann., 94 (1925), 784; through *J. pharm. chim.*, 3 (1926), 255

Levaditi, C., Girard, A., and Nicolau, S.
The treponemocidal action of gold and silver
Compt. rend. acad. sci., 181 (1925), 163; through *Bull. sci. pharmacol.*, 33 (1926), 187

Lyon, D. M., and Sands, J.
Action of adrenaline on the pulse rate
Am. J. Physiol., 71 (1925), 534; through *Bull. sci. pharmacol.*, 33 (1926), 179

McDowall, J. S., and Worsnop, B. L.
On the action of histamine
J. Physiol., 59, Nos. 4 and 5 (1924); through *Bull. sci. pharmacol.*, 33 (1926), 181

Munch, J. C., and Schwartze, E. W.
Toxicity of alcohols
J. Lab. & Clin. Med., No. 10, 985; through *Chem. & Drug.*, 104 (1926), 446

Nakamura, M.
Action of drugs on intestinal absorption
Tôhoku J. Exp. Med., 5 (1924), 29; through *Bull. sci. pharmacol.*, 33 (1926), 191

Nestler, A.
Irritating action of domestic spurge on the skin
Pharm. Zentralh., 67 (1926), 161

Raper, H. S., and Smith, E. C.
The direct action of insulin on the metabolism of fats
J. Physiol., 50, Nos. 1 and 2 (1925) 41; through *Bull. sci. pharmacol.*, 33 (1926), 188

Régnier, J., and Sallé, P.
Pharmacodynamic study of some mono and dialcoxylated benzhydrylamines
Bull. sci. pharmacol., 33 (1926), 148

Ross, V.
Presence of insulin in beef pancreas
Am. J. Physiol., 74 (1925), 579; through *Chem. Abstr.*, 20 (1926), 966

Rothlin, E.
Pharmacological characterization of the alkaloids of belladonna
Pflüger's Arch. ges. Physiol., 206, Nos. 4 and 5 (1924), 614; through *Bull. sci. pharmacol.*, 33 (1926), 182

Simonnet, H., and Tanret, G.
The action of ergotinine on the uterus of the guinea-pig
Bull. sci. pharmacol., 33 (1926), 129

Sybrandy, B.
Comparative study of various insulin preparations
Nederland. Tijdschrift Geneeskinde, II, 69 (1925), 2776; through *Chem. Abstr.*, 20 (1926), 965

Taylor, T. C., Braun, C. E., and Scott, E. L.
Studies on the ultrafiltration and electrodialysis of insulin
Am. J. Physiol., 74 (1925), 539; through *Chem. Abstr.*, 20 (1926), 966

Trocello, E., and Cruto, A.
Further researches on the preservation of insulin
J. Trop. Med., 29 (1926), 1; through *Chem. Abstr.*, 20 (1926), 1130

Visscher, M. B., and Green, R. G.
Insulin and body temperature
Am. J. Physiol., 71 (1925), 502; through *Bull. sci. pharmacol.*, 33 (1926), 179

Voegtlin, C., Dunn, E. R., and Thompson, J. W.
Antagonistic action of certain sugars, amino-acids and alcohols to insulin intoxication
Am. J. Physiol., 71 (1925), 574; through *Bull. sci. pharmacol.*, 33 (1926), 179

GENERAL BOTANY AND BACTERIOLOGY.

Violle
Antimicrobic action of chloropicrin
Compt. rend. acad. sci. (Jan. 25, 1926); through *Répert. pharm.*, 37 (1926), 80

VEGETABLE AND ANIMAL DRUGS.

Schmuck, A.
A study of the resins and aromatic substances of tobacco

Inst. Exptl. Tobacco Culture, Krasnodar (Russia), No. 20 (1924), 5; through *Chem. Abstr.*, 20 (1926), 967

Trankvilitskaya, N. A.

Distribution of resins in tobacco

Inst. Exptl. Tobacco Culture, Krasnodar (Russia), No. 20 (1924), 14; through *Chem. Abstr.*, 20 (1926), 967.

ALKALOIDS AND GLUCOSIDES.

Anon

Determination of alkaloids in lupins

Mach. Landw. Vers-Stat., 104 (1925), 226; through *J. Soc. Chem. Ind.*, 45 (1926), 214B

Anastasi, C.

Julocroton montevidensis

Revista Farm. (July 1925); through *Chem. & Drug.*, 104 (1926), 448

Bernhardt, P.

Acetic ether for opium assay

Latvijas Farm. Zurnal (Jan. 1926); through *Chem. & Drug.*, 104 (1926), 438

Clark, A. H.

The alkaloids of Ceanothus americanus

Am. J. Pharm., 98 (1926), 147

Dávid, L.

Cinchona assay

Pharm. Ztg. (Jan. 6, 1926); through *Chem. & Drug.*, 104 (1926), 438

Dávid, L.

Determination of quinine

Pharm. Ztg., 71 (1926), 26; through *J. Soc. Chem. Ind.*, 45 (1926), 172B

Debucquet, L.

Arsenical emetics of pyridine, quinoline and some alkaloids

J. pharm. chim. [8], 1 (1925), 571 and *Ibid.*, 2 (1925), 5; through *Chem. Abstr.*, 20 (1926), 1131

De Laet, M.

Spectrographic identification of alkaloids

Ann. méd. légal, 1 (1921), 148; through *Chem. Abstr.*, 20 (1926), 1130

Ekkert, L.

Contribution to the reaction of alkaloids with furfurol-sulphuric acid

Pharm. Zentralh., 67 (1926), 179

Eschenbrenner, H.

Jaborandi alkaloids

Pharm. Ztg., 70 (1925), 1560; through *Chem. Abstr.*, 20 (1926), 1129

Fabre, R.

A new method of extraction of alkaloids or other organic compounds contained in tissues

Schweiz. Apoth. Ztg., 64 (1926), 104

Fleischhacker, H.

Bulbocapnine hydrochloride

Deut. med. Wochschr. (Feb. 26, 1926); through *Chem. & Drug.*, 104 (1926), 448

François, M., and Seguin

Iodobismuthate of amorphous quinine

Répert. pharm., 37 (1926), 68

Goodson, J. A., and Henry, T. A.

Echitamine

Wellcome Chem. Research; through *Am. J. Pharm.*, 98 (1926), 179

Majima, R., Sugiuomé, H., and Morio, S.

The separation of japaconitine as different isomers

Ber., 50B (1924), 1456; through *J. pharm. chim.*, 3 (1926), 256

Martindale, W. H.

Quinine and other alkaloidal injections

Lancet, I (1926), 455; through *Chem. & Drug.*, 104 (1926), 450

Messner, J.

Separation of cinchona alkaloids

Pharm. Zentralh., 67 (1926), 146

Michiels and Leroux.

Studies on Rubiaceae alkaloids and observations on gelsemine and yohimbine

Bull. acad. roy. méd. Belg. [5], 5 (1925), 403; through *Chem. Abstr.*, 20 (1926), 964

Polonovski, M., and M.

Alkaloids with attenuated toxicity

Chem. & Drug., 104 (1926), 438

Rosenthaler, v. L.

Microchemical reactions of tutocaine

Pharm. Zentralh., 67 (1926), 179

Rundshagen, H.

Determination of nicotine

Chem.-Ztg. (Jan. 16, 1926); through *Chem. & Drug.*, 104 (1926), 441

OILS, FATS AND WAXES.

André, Em.

Oils of the chaulmoogric group

Compt. rend., 181 (1925), 1089; through *Chem. Abstr.*, 20 (1926), 1130

Lühring, H.

Contribution to the valuation of cacao

Pharm. Zentralh., 67 (1926), 129.

Thomas, A. W., and Mattikow, M.

Method for the direct identification of rape seed oil by isolation of erucic acid

J. Am. Chem. Soc., 48 (1926), 968

ESSENTIAL OILS.

Anon

Essential oil of camphor leaves and twigs

Bull. Imp. Inst., 23 (1925), 421; through *J. Soc. Chem. Ind.*, 45 (1926), 215B

Anon
Essential oil of massoi bark
Bull. Imp. Inst., 23 (1925), 423; through *J. Soc. Chem. Ind.*, 45 (1926), 215B

Anon
Essential oil of origanum maru
Bull. Imp. Inst., 23 (1925), 426; through *J. Soc. Chem. Ind.*, 45 (1926), 215B

Anon
Medamy losoh oil
Bull. Imp. Inst., 23 (1925), 428; through *J. Soc. Chem. Ind.*, 45 (1925), 215B

Dafert, O., and Kwizda, R.
Haemolytic determination of essential oils
Heil. u. Gewürz-Pflanzen, 8, No. 3 (1926); through *Chem. & Drug.*, 104 (1926), 448

Etablissements, A. Chiris
Oil of cedar from British East Africa
Parfum. de France, No. 35 (1926), 22; through *Chem. Abstr.*, 20 (1926), 1130

Fellenberg
Tests for rancidity
Pharm. Weekblad, 63 (1926) 122; through *Drug. Circ.*, 70 (1926), 145

Huerre, R.
Pyrogenic oil of thuga
J. pharm. chim., 3 (1926), 197

Kafuku, K., and Kawaguti, K.
On properties of camphor oils obtained from different parts of the plant
J. Pharm. Soc. Japan, 528 (1926), 13

Paget, H.
Determination of ascaridole in chenopodium
Chem. & Drug., 104 (1926), 448

Schmuch, A.
Ethereal oils of tobacco
Inst. Exptl. Tobacco Culture, Krasnodar, No. 19 (1924), 1; through *Chem. Abstr.*, 20 (1926), 967

Thoms
Detection of diethylphthalate in ethereal oils
Apoth. Ztg., 40, p. 196; through *Drug. Circ.*, 70 (1926), 145

Viard, M.
Terpeneless essential oils
Parfums de France, No. 35 (1926), 10; through *Chem. Abstr.*, 20 (1926), 1130

MISCELLANEOUS PLANT CONSTITUENTS.

Ahmann, C. F., and Hooker, A. D.
Determination of pectin
Ind. Eng. Chem., 18 (1926), 412

François, M., and Seguin, L.
Study of the juice of the black currant and reactions of orchid
J. pharm. chim., 3 (1926), 241

Krever, K. J.
Chemical composition of some varieties of Russian tobacco
Inst. Exptl. Tobacco Culture, Krasnodar (Russia), No. 23 (1924); through *Chem. Abstr.*, 20 (1926), 967

Pater, B.
Ash content of plantain (Plantago lanceolata)
Pharm. Monatsh., 6 (1925), 217; through *Chem. Abstr.*, 20 (1926), 965

GENERAL AND PHYSICAL CHEMISTRY.

Figdor, W.
Application of micromethods to control work in pharmaceutical manufacturing
Am. J. Pharm., 98 (1926), 157

Richter, E.
Protective coating for corks
Apoth. Ztg. (Jan. 2, 1926); through *Chem. & Drug.*, 104 (1926), 445.

INORGANIC CHEMICALS.

Denigès, G.
Study of Millon's reagant
Bull. soc. pharm. Bordeaux, 1 (1926), 3

Griffiths-Jones, E.
Lead and arsenic in tartar emetic
Lancet, I (1926), 195; through *Chem. & Drug.*, 104 (1926), 439

Isnard
Assay of sodium bicarbonate
Répert. pharm., 37 (1926), 76

Lassieur, A.
Precipitation of magnesium by alumina
Répert. pharm., 37 (1926), 72

Lebeau and Damiens
Easy method for the preparation of fluorine
Répert. pharm., 37 (1926), 65

Little, E.
The determination of acidity
JOUR. A. PH. A., 15 (1926), 178

Lynn, E. V., and Shoemaker, H. A.
The chemistry of nitrosyl chloride
JOUR. A. PH. A., 15 (1926), 174

ORGANIC CHEMICALS.

Anon
Iron carbonyl
Umschau, 29 (1925), 1007; through *Pharm. Zentralh.*, 67 (1926), 149

Gelarie, A. J., and Greenbaum, F. R.
On the instability of the sodium salt of benzoylhydrogen peroxide
Am. J. Pharm., 98 (1926), 163

Hiers, G. S., and Adams, R.
Synthesis of dihydrochaulmoogric and dihydrohydnocarpic acids containing a cyclohexyl in place of a cyclopentyl group. III
J. Am. Chem. Soc., 48 (1926), 1089

Lewis, W. L., and Bent, H. E.
A study of 3,4-diamino-phenylarsonic acid and some of its derivatives
J. Am. Chem. Soc., 48 (1926), 949

Maass, O.
Properties of pure hydrogen peroxide
Pharm. Era, 62 (1926), 31

Maurin, E.
Investigation of the anthracene derivatives of "rumex" and "polygonum"
Bull. sci. pharmacol., 33 (1926), 138

Miyamichi, E.
On the formation of the thiazole nucleus from acylated amino acid esters
J. Pharm. Soc. Japan, 528 (1926), 103

Murayama, Y., and Arihara, C.
Studies on the camphor group. III
J. Pharm. Soc. Japan, 528 (1926), 101

Newcomb, C.
Determination of alcohol and ethyl chloride in chloroform
Analyst, 51 (1926), 19; through *J. Soc. Chem. Ind.*, 45 (1926), 172B

Noller, C. R., and Adams, R.
Synthesis of dihydrochaulmoogric and dihydrohydnocarpic acids. II
J. Am. Chem. Soc., 48 (1926), 1080

Pauchard, E.
Contribution to the iodometric estimation of aldehydic sugars
J. pharm. chim., 3 (1926), 248

Phelps, E. P., and Rowe, A. W.
Ether studies. III. Quantitative determination of aldehyde as a contaminant.
J. Am. Chem. Soc., 48 (1926), 1049

Romijn and Kohn
Determination of chlorides, bromide and sulphocyanates in presence of cyanides
Z. anal. Chem., 65, 433; through *Drug. Circ.*, 70 (1926), 145

Schuette, H. A., and Harris, L. E.
Isopropanol as a substitute for ethanol. I. The determination of saponification numbers
JOUR. A. PH. A., 15 (1926), 166

Schuette, H. A., and Harris, L. E.
Isopropanol as a substitute for ethanol. II. The titer test
J. Am. Chem. Soc., 15 (1926), 169

Tapley, M. W., and Giesy, P. M.
The preparation of tribromhydrin and propadiene
JOUR. A. PH. A., 15 (1926), 173

Thoms
Detection of diethylphthalate in alcohol
Apoth. Ztg., 39, p. 1426; through *Drug. Circ.*, 70 (1926), 145

Valeur, A., and Launoy, L.
Some observations on the D. M. index for the analysis of arsenobenzenes
J. pharm. chim., 3 (1926), 193

Vanino, L., and Guyot, O.
On the salts of anhydromethylencitronic acid
Arch. Pharm., 2 (1926), 113

CLINICAL AND DIAGNOSTIC METHODS.

Fearon, W. R.
Simple test for bile
Lancet, I (1926), 291; through *Chem. & Drug.*, 104 (1926), 441

PIERRE POMET, A SEVENTEENTH CENTURY WORKER FOR PURE DRUGS, SPICES AND FOODS.*

BY L. F. KEBLER.[1]

In order to understand existing conditions, it is necessary to know something of the efforts of the past. I shall therefore briefly note a few historical features, undoubtedly well known to Monsieur Pomet, a man of the highest ideals.

The striving for pure foods and drugs antedates the memory of man. Pliny's Natural History, written about 77 A.D., is one of the oldest source of information available to us. Much of what he says was common knowledge in his time. He simply recorded current information, including the wheat and some chaff, in his

* Presented at the Des Moines meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, August 24–28, 1925.

[1] Bureau of Chemistry, Washington, D. C.

voluminous granary. About a third of his 37 books is devoted to thousands of "remedies" and their natural sources, including many diversions into the art of medicine. Sophistication of drugs and other commodities of life was common in the early days of the Roman Empire. Pliny repeatedly calls attention to these practices and says: "It is the natural propensity of man to falsify and corrupt everything. At the present. . .they (physicians) trust entirely to the druggists who spoil everything by their fraudulent adulteration. For this long time past, they have even purchased their plasters and eye salves ready made, and the consequence is, that the spoiled and adulterated wares in the druggists' shops are thus got rid of."

Pliny gives tests for the genuineness of a few drugs, among which may be mentioned elaterium, opium, white lead and hematite.

Dioscorides, a renowned Greek physician, about 100 A.D., wrote a classic of five volumes entitled "De Materia Medica," considered by many as the chief ancient work on pharmacology. He drew much of his information from previous sources and is credited as being the first to indicate means for detecting the adulteration of drugs. He refers to debased opium, styrax, resin, etc.

The adulteration of wine in Greece was so notorious that special inspectors were appointed to detect and stop these practices.

Claudius Galen, 129 to 210 A.D., was among the first to prove that cinnamon lost its potency by exposure and referred to the necessity of physicians knowing drugs and their properties in order to detect impositions. He gives much information concerning the drug trade in Rome and throughout the Empire. In order to assure himself of the quality of his drugs, he gathered many of them himself. Galen refused to reveal the methods employed for certain adulterations which he had investigated personally, lest the evil practices spread further.

For about a thousand years there is a practical barrenness of literature dealing with drugs. Either nothing of importance was done and recorded or the records are lost to civilization.

A Norman-French ordinance issued 1316 A.D., intended especially for "spicers," reads in part:

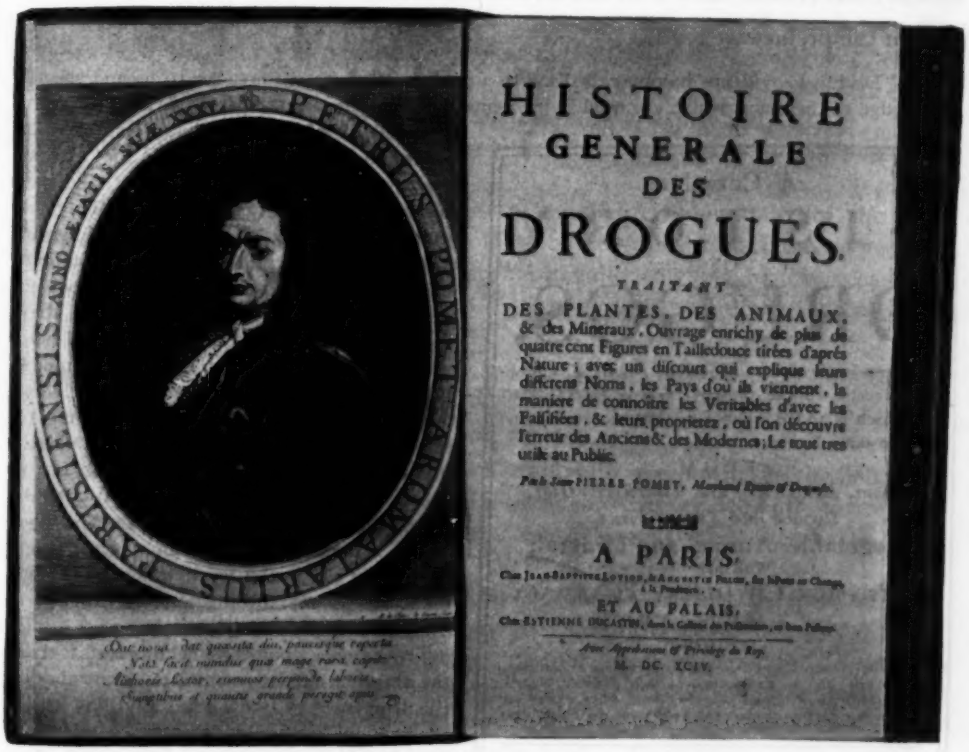
> "No man shall dub any manner of wares, that is to say, by putting in a thing that was in another bale, and then dressing the bale up again in another manner than the former in which it was first bought, so as to make the ends of the bale contain better things than the remainder within the bale, by reason whereof the buyer may be deceived, and so lose his goods. Also that no man shall moisten any manner of merchandise, such as saffron, alum, ginger, cloves, and such manner of things as may admit of being moistened; that is to say, by steeping the ginger, or turning the saffron out of the sack and then anointing it, or bathing it in water; by reason whereof any manner of weight may, or any deterioration, arise to the merchandise."

A French ordinance (1330) forbade the mixing of wines or falsely naming them. Similar edicts were in vogue during the life of Pomet. In the same country in 1336 a law was in force prohibiting apothecaries using exhausted, sophisticated or corrupted drugs in the preparation of medicines.

In England drugs and groceries were sold for many years in the same shops. In 1617 the apothecaries separated themselves from the grocers and soon thereafter they complained of the frauds and artifices of the grocers from whom they continued to be supplied with many drugs.

The College of Physicians compiled the first English Pharmacopœia and published it in 1613. During the seventeenth century there were committees of doctors in Europe whose duty it was to inspect the druggists and from these committees originated various Pharmacopœias, *viz.:* Pharmacopœia Antwerpiensis, 1661; P. Utrajectina, 1663; P. Amstelodamensis, 1668; Antidotarium Bononiense, 1674; Regia Chemica et Galencia, Geneva, 1684.

Pierre Pomet, chief druggist to the King of France, was born in Paris, 1658. He began to devote himself to his chosen profession early in life. After finishing his apprenticeship he traveled extensively in England, Italy, Germany and Holland. On the different voyages he acquired an intimate knowledge of medicinal


HISTOIRE
GENERALE
DES
DROGUES.
TRAITANT
DES PLANTES, DES ANIMAUX,
& des Mineraux. Ouvrage enrichy de plus de
quatre cens Figures en Taille-douce tirées d'après
Nature ; avec un discours qui explique leurs
differens Noms, les Pays d'où ils viennent, la
maniere de connoître les Veritables d'avec les
Falsifiées, & leurs proprietez, où l'on découvre
l'erreur des Anciens & des Modernes ; Le tout tres
utile au Public.
A PARIS,
ET AU PALAIS,
M. DC. XCIV.

substances and in due time opened a drug store in Paris, which proved to be very successful. His talents and honesty won him the esteem of the most skillful physicians and it was at their invitation that he undertook at the "Jardin des Plantes" a demonstration of the drugs that he had collected at great expense from all countries with which France had relations at that time. Pomet was a teacher of rare ability and assisted in every way those who followed his course of lessons.

He was occupied with a description of the rare things in his cabinet at the time of his death in 1699, only 41 years old. On the same day he was sent a pension which Louis XIV, surnamed The Great, had granted as a reward for his services.

Pomet is the author of a book of two volumes. The title page of the first volume is shown above.

The objects and purposes of this 231-year old publication are shown in the Dedication and Preface. In the dedication of the Chief Physician of his Majesty, Pomet says:[1]

"It is impossible to understand how much the public suffers from the traffic in the world of, I do not know how many, sophisticated drugs which can by no means produce the effect which is expected of them, either for the reëstablishment or preservation of health. It may be still more surprising to learn that this terrible evil is the most ordinary thing in the world and that nothing is more common in the drug shops and apothecary shops than these falsified drugs. It is my purpose, sir, to expose in this work the bad faith which causes so much harm to the health of human beings. As these dark mysteries cannot be revealed without incurring the hatred of those who so unworthily profit from the credulity of human beings, I have need of a protector of sagacity and authority, and I cannot find a better one, sir, than in your person....."

In the preface we read:

"Divine Providence having called me to a profession which requires me to have a special knowledge of the drugs which are used in medicine, I have applied myself to it with all the care and good faith which one should expect of an honorable man. I must confess that at first I was impressed with the lack of sincerity which prevails in a trade which is not only the greatest in the kingdom but the most useful and the most important in the life of mankind. The abuses which I first noticed and which were the more horrible to me because they were designed to deprive men of the real help which they had a right to expect from medicine, either for the preservation or the reëstablishment of their health, induced me to employ all my time in exposing the sophistications which criminal cupidity has introduced in a profession where good faith is without doubt more valuable than in any other. These are the circumstances which have given rise to the work which I am now publishing.....Nothing is more capable of bringing medicine into disrepute and of bringing reproaches upon those who profess it than the abuses which are committed every day in the drug trade. It surpasses anything which the imagination is able to conceive. It may be said at the conclusion of this work that this would have been a good place to declaim against such bad usage which is capable of doing so much harm to the health of individuals and of causing so much ravage to human society, but having more in mind the idea of correcting abuses than of decrying the professions I have usually confined myself to giving the methods of discerning the good drugs from those which are falsified. If it may sometimes have happened that in my zeal I may have used some expression which was perhaps too hard (if such a thing is possible in a subject where it is a question of nothing less than the life of human beings), I may be pardoned perhaps for these slight impulses which after all are only intended to give a better understanding of the evils which the whole world is interested in eradicating.

A Compleat

HISTORY

OF

DRUGGS,

Written in *French* by Monsieur *POMET*, Chief Druggist to the present *French* KING; to which is added what is further observable on the same Subject,

FROM

Messrs. *LEMERT*, and *TOURNEFORT*,

Divided into Three Classes,

Vegetable, Animal and Mineral;

With their Use

In Physick, Chymistry, Pharmacy,

And several other ARTS:

ILLUSTRATED

With above Four Hundred Copper Cutts curiously done from the Life; and an Explanation of their different Names, Places of Growth, and Countries from whence they are brought; the Way to know the True from the False, their Virtues, *etc.* A Work of very great Use and Curiosity.

Done into *English* from the ORIGINALS.

VOL. I.

LONDON:

Printed for *R. Bonwick, William Freeman, Timothy Goodwin, Matthew Wotton, John Walthoe, S. Manship, John Nicholson, Benjamin Tooke, Rich, Parker and Ralph Smith. 1712.*

[1] Translated by A. W. Warthen.

"My work is, therefore, not only useful to those who practice medicine and who have as much right as any one to know whether only pure drugs are used in the composition of the remedies which they prescribe, but also to pharmacy students, to druggists and to apothecaries who will be able henceforth, through the information which they receive in this work, to discern the genuine from the false in usage or in the drug trade.

"I hope that those who read this work will concede that they have never seen such a complete treatise on drugs and that I have collected here not only material which is distributed among a great number of authors, and which could not be found without difficulty, but also a quantity of material of which nothing is known or at least very little by the authors who have preceded us."

There were scores of books on drugs printed or available in the 16th and 17th centuries, but Pomet's abundantly illustrated work, in spite of some inaccuracies, was considered the most complete and one of the best treatises that had yet appeared covering medicinal substances, spices and many food products. The publication was very well received. It was translated into German in 1717, and into English, with material additions, in 1712, 1725 and 1737. A revised edition of two volumes, prepared by Pomet's son Joseph, was printed in 1735.

The authors of the 1712 English revision made many useful additions, as is indicated by the title page herewith.

This English revision also contains an excellent bibliography of the many ancient works consulted. This is the oldest bibliography that I have ever seen. It is exceedingly interesting and of inestimable value to those having occasion to inform themselves in ancient drug lore; the wording of the title page is reproduced in the accompanying cut.

THE LITERATURE OF PHARMACY.*

BY FRED B. KILMER.

Heaped high on the top of Hargraves' desk, and overflowing to the floor, were rolls and bundles of drug magazines and journals, mostly enclosed in their wrappers, unopened and unread. When some one alluded to this mass of literature, Hargraves remarked:

"I never read them. I have no time. There's nothing in them anyway. Once in a while we have a clean-up, and out they go to the waste heap.

"Some of them are sent to me without my asking; some I pay for, to satisfy a glib canvasser or to stop a stream of letters from the publisher. Next year I will stop all of them. It's too much bother even to take them in and throw them away."

There are thousands of Hargraves in the land. Their names are counted on the magazine subscription lists and help the "circulation liar" to raise the advertising rate, but the pages are not read.

Noting the meagerness of the library in the store of a prominent pharmacist, he was questioned as to whether his home library contained works pertaining to pharmacy.

He replied emphatically, "No! when I go home I want to forget about pharmacy."

The pharmaceutical literature that is not read bulks large; it constitutes a great waste of energy, ink and especially of good paper, which the world just now needs to conserve.

It has been claimed that pharmacy ranks with the professions because it has a

* Section on Historical Pharmacy, A. PH. A., Des Moines meeting, 1925.

literature. It is feared that there are many followers of pharmacy to whom pharmaceutical literature is an unknown realm. The writer of this paper looks upon pharmaceutical literature from the standpoint of a reader and not a producer. A few misguided editors may have used some of his "stuff" as space fillers, but at the bottom he is only a reader and a student of the pages.

PERIODICALS.

That which to us is the stated periodical is of rather recent origin. In ancient literature the place which it occupied was filled by the spoken word in the form of the ritual—the sayings of the savant who, whenever he could find listeners, gave forth wise sayings.

Long before the art of printing, the manuscript was copied and recopied and passed from hand to hand. The early guilds or societies disseminated their transactions and dissertations through hand-written copies. It was long after the invention of printing that the stated periodical appeared.

A common form of publication in religious, political and scientific literature circles was the pamphlet, of which many unique examples are in existence.

Weekly newspapers appeared on the Continent shortly after 1600, but it was not until a hundred years later that they gained a foothold in England. One of the earliest scientific journals was the "Journal des Scavans" (Paris, 1665). The first journal with the name "pharmacy" appearing in the title was "Recueil periodique des Observations de Medecine Chirurgie et Pharmacie" (Paris, 1754).

The "Journal de la Societe des Pharmaciens de Paris" (1797) is probably the first periodical devoted exclusively to pharmacy.

The first pharmaceutical journal in the English language was *The American Journal of Pharmacy*, which began publication in 1825, and has continuously held a unique position as a journal devoted exclusively to pharmacy.

The *British Pharmaceutical Journal* dates from 1841, and *The Chemist & Druggist* of London dates from 1859.

"No science or group of sciences has so many current periodicals as medicine."

The Library of the Suregon General at Washington reports that in a period covering a quarter of a century they had indexed about nine thousand current periodicals. (This included pharmacy.)

Without invidious comparison, periodicals connected with pharmacy may be roughly divided as follows:

Those devoted mainly to the scientific side of the art, which would include journals of pharmacology. Chemical journals, some of which include departments covering pharmaceutical chemistry.

In the study of sciences as related to pharmacy, one must also include journals devoted to materia medica, botany, bacteriology, physics and other like subjects.

Another class might be termed drug or trade journals. They cover the field of crude drugs, chemicals, and often include paints, oils, varnishes, etc.

Then we have the journals which are the greatest in number and popularity—the pharmaceutical journals of modern times. In their pages may be found a certain amount of science, proceedings of associations, news, personalities, gossip, reviews and abstracts, and in addition a goodly space given over to the mercantile side of the calling.

The scientific journal has fewer subscribers and the least amount of advertising.

In the more popular journals advertising crowds over into the reading columns. In this class of journals the advertiser is the mainstay, as the subscription price is often as low as one dollar a year.

As the cash register occupies the center of the modern drug store, so in the journal—business topics fill the most prominent space.

Some of the English and American periodicals produce well-balanced publications devoting an allotment of space to matters of science, trade and news.

Continental journals, as a rule, are either all science or all trade. Some of them are printed on a low grade of paper, with poor ink, and are unattractive.

In both medical and pharmaceutical journals there is a high mortality. Some of them are very short lived. A few of the existing publications represent the merging of several journals. A journal devoted primarily to scientific pharmacy must, of necessity, be supported by an organization, or be endowed.

We may here reflect that the early examples of the printer's art were executed with carbon ink upon paper made of linen or other fibre, and after centuries are in a state of good preservation. Our modern productions are printed on pulp fibre with chemical inks. Deterioration begins with the issue. This may be a wise provision—perhaps they are not worthy of preservation.

Within a generation the tone, status and makeup of journals devoted to drugs and pharmacy have greatly changed. Formerly the editor considered himself an expositor. He filled his pages with essays calculated to edify and instruct. There were elementary and accurate descriptions of drugs, pharmaceutical processes, formulas and troublesome problems in prescriptions and mixtures. New remedies, new ideas, if noticed, were treated with reserve.

The columns were heavy with scholastic, academic, didactic, serious thought. Commercial topics were rare; personalities, except obituaries of persons of prominence, were excluded. It was not considered good form to give news in the style ordinarily looked for in the newspaper or magazine.

State and local associations were at first accorded scant notice, but gradually their transactions were given a place. One enterprising editor for a time had reporters at every pharmaceutical meeting.

The advent of pharmacy laws and boards to enforce them, while discussed sparingly at first, arose to full prominence. Except in journals closely connected with a college, openings and commencement were not noticed.

The wave of price-cutting inaugurated in the early 80's, followed by the famous "Campion plan," was the beginning of trade discussions in pharmaceutical journals. At once these themes became popular, sometimes crowding out discussions of a scientific nature.

A feature of the former period is revealed in discussions of the advisability of Sunday closing and the shortening of drug-store hours. At first these propositions were strenuously opposed, but the growing scarcity of clerks, coupled with the expense of heating, lighting and long hours when there was little trade, forced the reduction of hours of service.

Increased expenses for rent, clerk hire and a multitude of other things led to the introduction of classes of goods not before sold in drug stores, and the heading "Side Lines" appeared in the journals, with pages of discussion.

The rise of chain stores, with movements for coöperative buying, at once became a journalistic theme, until, like the drug store itself, the journal filled its columns with many things besides drugs.

Fifty years ago a journal devoted to pharmacy must needs be more educational than is required to-day. Nowhere else could the pharmacist then obtain knowledge pertaining to his art. To-day he has accessible an abundance of special magazines devoted to chemistry, biology, bacteriology, materia medica and all branches of the arts kindred to his own. There are hundreds of popular magazines filled with disclosures of physical phenomena. The advances of science, new ideas, new remedies, new revelations are cabled in full to his newspaper. By the time his pharmacy journal reaches him, so far as its science is concerned, it is a back number.

Thus, he reads the magazine and the newspaper, and the journals devoted to his art lie untouched.

PHARMACY IN PICTURES.

The literature of pharmacy, beginning with the earliest and coming down to now, has carried illustrations. The ancient manuscripts were illustrated with drawings, shaded and colored, and those of the Middle Ages were inlaid with gold and silver. With the art of printing came the woodcut, followed by the etching on copper and steel.

The delineations of the older artists leaned towards the picturesque. They were faithful and painstaking in their labors, and to this day such examples as have come down to us carry an entrancing charm.

In the early journal literature illustrations were sparse, possibly due to the expense and labor involved. Occasionally the face of a celebrity, or the outline of a piece of apparatus, at times a botanical specimen, graced the pages.

With the art of photography came the half-tone, and the pages of the modern journals are filled with photographic illustrations. There are men and women, singly and in groups, views of stores, pictures of automobiles, views of travel and of far off lands, crowding out the text. The half-tone and even the colored illustration lacks picturesqueness. The artistic is lost in literalness. The camera reveals that which the human eye cannot see, and the perspective is obscured in the detail.

In the photograph one sees the grain of the wood, and the weave of the cloth. The salient, impressive features are lost in the multitude of things shown.

One sometimes regrets that the author does not resort to drawing rather than to photography in the delineation of apparatus, processes, or even with botanical specimens.

THE EDITOR.

Contributors and readers of journals complain of the exclusion of some things from the columns and the admission of others, and between them the editor's chair is not soft-cushioned. Space is fixed by the limits of paper and type, cost and postage. Certain themes must be covered; place has to be found for current items.

The journal must meet expenses; advertising pages crowd out text. Subscribers have to be satisfied. Between conflicting, crowding elements the editor must choose quickly and send his copy to the printer, using the best judgment at his command in carrying on his work. He may do things he ought not to have done and leave undone things which he should have done.

The editor is the most severe critic of his own journal. He rejoices in a good issue; he is saddened by a poorer effort, working always under a strain, with meager financial return. He gives his life to his readers, and his greatest reward is their commendation.

The man who fills the position of editor of a journal devoted to pharmacy is entitled to the highest consideration and support of his fellows. He is the leader of pharmaceutical thought. Through the columns under his charge pharmaceutical science, education, legislation and business policies take shape and are spread before the reader.

Examination of our journals for generations past shows that uniformly and persistently the editorial columns have fostered the advance of science and education, supported beneficial legislation, propounded sound business methods. They have likewise taken a firm stand against inimical legislation, the lowering of educational standards and the imposition of inequitable burdens upon the calling. They have vigorously deprecated the cutting of prices, the bootlegger and the dope seller.

The pharmaceutical editor should rank in our esteem with the educator and the association leader.

It is charged that the average druggist cannot see beyond the walls of his own store. With few exceptions our drug journals are more and more becoming provincial, sometimes within narrow lines. If connected with a college, the spirit of the college governs: Eastern journals bear the New England stamp, New York publications reflect the glare of the "Great White Way," southern magazines are accentuated with phrases of the South, while those of the West bring breezes from the prairies and mountains.

In part this is by reason of their localized circulation, and in another part it is due to the editor's outlook. While this course does not tend towards the unification of pharmacy, it does bring the journal pages close to the reader.

CONTRIBUTIONS.

In days not far distant, journals were filled with contributions from readers who were retail druggists. These old-time articles, while not always constructed in the highest literary form were penned from the prescription counter and the back room of the drug shop. They were stained with the contents of the graduate and mortar, and carried the atmosphere of the drug store.

Stated contributions from this class of writers have largely disappeared. Scientific dissertations now emanate from college professors and from manufacturers' laboratories.

A recent number of one of our journals of pharmacy contained 105 pages of text. Scientific contributions from educational institutions filled thirty-one of the pages, from government and hospital laboratories there were eleven pages, and from manufacturing laboratories, twenty-seven pages.

Of late there has arisen in pharmacy a class of special contributors. These are contributors who write for a fee, "space writers." Some of them are experts in merchandising, advertising and like callings. In the main their contributions are well written; they abound in suggestions, but often the methods are more applicable to a grocery or hardware store than to pharmacy.

ANONYMITY.

In general and in scientific literature it was an old custom for the author to appear under an assumed name, or anonymously. Even in editorial contributions the custom of signing is recent.

Nowadays the reader judges the merit of an article through the name of the author, rather than by the subject-matter. If he has a personal acquaintance with the writer he selects through his likes and dislikes. Anonymous dissertations are passed unread. The old-time writer was sometimes shocked to see his thoughts in type. He would not have dared to have his name inscribed thereto.

Both anonymous and personal authorship have advantages and disadvantages. Signed contributions secure credit to the author and place upon him proper responsibility, for one is apt to be cautious in making statements which will appear under his name.

In the mind of the reader the statements of a well-known author are accepted without question. Who would dare to challenge the writings of such authorities as John Uri Lloyd or Prof. LaWall! Yet both of them have been known to make slips.

The new writer, blinded by the appearance of his name in print, is apt to write loosely, do "stunts" beyond the range of his theme and rather out of place in literature. It might be helpful if editors required new writers to practice anonymity until they had found their bearings.

That the reader might be tempted to make selection through subjects rather than authors, the name of the writer could be placed at the end of the contribution rather than at the beginning.

Undoubtedly young writers hesitate to send contributions to the journals through fear that their efforts must stand comparison with those of well-known and distinguished writers.

It was a custom with authors to place their portrait in their volumes. Modern journals have introduced the practice of accompanying contributions with a halftone of the writer. Thus one can choose his author through his name or through his features.

NEW WRITERS.

We are not developing new writers in pharmacy. The younger generation receive but little encouragement at association meetings or in journalism. Readers want authors who speak with authority and whose names command attention.

We produce but few geniuses—polished writers who break into journalism in full panoply. With the best of authors the beginnings are crude.

A fairly successful writer has stated that his first paper, read at a pharmaceutical meeting, was severely scorched. He was chagrined and vowed "Never again!" Upon reflection, however, he resolved that he would continue his endeavors until the very men who had scoffed at his maiden effort would commend his work, and his later productions were crowned with success.

Prof. P. W. Bedford, himself a teacher and editor, urged his students to write papers to be read at association meetings and for publication in journals. His kindly stimulus developed many writers.

The writing of essays, letters and dissertations is of greater value to the writer himself than to the reader or hearer. The work of preparation involving, as it

does, thought, study and research is a worthy practice, and should give to the worker great pleasure.

The realization that one has added even a little to the world's knowledge, is a satisfaction that cannot be expressed in words.

LETTERS TO THE EDITOR.

We get a glimpse of the reader's point of view in the columns set apart in some of our journals where "letters to the editor" appear. They may be likened to the discussions at pharmaceutical meetings.

With an Englishman it is an inherent constitutional right to indite letters to the press. The English pharmacist tersely and vigorously airs his grievances and propounds his views in his pharmaceutical journal.

Running through several issues of an English journal were many pages given over to readers' letters. They covered a wide range of subjects, from government regulations to simple formulæ. They included such deep themes as "the earth's rotundity," "matter," "energy," "space," "the elementary constitution of light and heat," "the breaking down of the atom."

Evidently the British pharmacist reads his journals and the editor must "watch his step" to keep pace with him.

LANGUAGE.

In the earlier ages of the world the literature of each separate people, whether spoken or written, was in the native tongue. Through the intermingling of nations came a commingling of languages. Gradually certain languages assumed prominence in recording the annals of the arts.

The literature of pharmacy in the ancient Sanskrit, Egyptian, Sumatran and Oriental tongues has been only partly explored. The fragments which remain offer promise to the historian. With the rise of Greek civilization story, song and sciences were put down in the Greek tongue. With Hippocrates, the so-called "Father of Medicine," we have inklings of a real materia medica and pharmacy.

The Roman Empire carried the Latin language over the known world. Until very recent times classical literature was written in Latin.

Much of the literature of the arts and sciences, including pharmacy in the Latin and Greek languages, remains untranslated. We are in a new time, racial differences disappear and the masses in all nations are becoming educated. The printing press has spread knowledge in many tongues.

In our time three great languages, German, French and English, control pharmaceutic thought. The German literature is abundant and ponderous. The German critics and reviewers are the world's marvels for thoroughness and minuteness. In materia medica, pharmacognosy, and in other sciences they have evolved masterpieces.

The German habits of research outclass the rest of the world, but their reflections and annotations drag out to interminable length. German science is thorough but it is leaden and clumsy. The German language is unattractive and unwieldy. Patriotically the Germans adhere to a form of letter-text that is hideous and blinding. Persistently they resist the use of international scientific terms.

Against the spread of German literature stand hostile forces. Since the World War nations and races who fear German domination have set their hearts

and bodies, and are ready to raise their guns, against German advance to a "world power."

The French speech—smooth, light, happy and expressive, will ever stand as a formidable rival to the Teutonic tongue, and against other forms of speech. French pharmacy is progressive, picturesque and attractive, and through language alone must hold a high place in the world's literature.

The English, Italian and French have technical and scientific phrases with common meanings. Through the aggressiveness of Great Britain on the seas, English has become the language of commerce. The British Pharmacopœia and Codex are Imperial in authority, legalized throughout the British Empire. The literature of pharmacy and materia medica of British origin is not voluminous, but it is conservative, thorough and substantial.

In the English tongue we have the "American Dispensatory" and works of the type of "Remington's Pharmacy," which have no equal or counterpart in any language.

From the British Pharmaceutical Conference, from the AMERICAN PHARMACEUTICAL ASSOCIATION, and from various State Pharmaceutical Associations, there emanates literature upon pharmacy and kindred subjects, large in volume and value, and exerting a tremendous influence upon pharmaceutical practice and thought.

Materia medica and pharmacy in the English language has encircled the globe, and in a very large portion of the earth it is a predominating factor.

With the tremendous prestige already attained through combined British and American influence, the pharmacy of the future, so far as literature and practice are concerned, bids fair to be recorded in the English language.

LANGUAGES OF THE JOURNALS.

A rather incomplete census of the journals devoted to drugs, pharmacy and allied branches reveals the following as to countries and languages:

Argentine Republic	1	Czechoslovakia	7	India	1	Poland	3
Australia	2	Cuba	3	Italy	6	Porto Rico	2
Austria	3	Egypt	2	Japan	3	Roumania	3
Belgium	2	France	5	Jugo-Slavia	2	Russia	3
Brazil	2	Germany	10	Manila	1	Spain	3
Canada	7	Great Britain	5	Mexico	2	Sweden	2
Chile	1	Guatemala	1	New Zealand	1	Switzerland	3
China	1	Holland	3	Norway	2	Syria	1
Columbia	1	Hungary	4	Peru	1	United States	22
						Venezuela	2

ASSOCIATION LITERATURE.

In days long past association meetings were a prolific source of literature. All has now changed. The association meeting is very often the druggist's only vacation; he goes to the meeting to get away from strenuous duty—to have a good time and no one wishes to deny him all the pleasure which he can get out of it.

Usually it is difficult to obtain a quorum for a session devoted to the reading of papers, while the evening cabaret is crowded to the doors. The entertainment committee has a long way out-distanced the committee on papers and queries.

This change has benefited the association by increasing the membership and

attendance, thereby enriching the treasury, but it has not added to pharmaceutical literature. When the papers read at an association meeting are compared with the membership, the contributions will be found to be very small.

A certain association, in order to save publication expense, resolved to omit all papers from their proceedings on the ground that they were of little or no interest.

Through various causes the practice of writing papers to be read at association meetings has not kept pace with the work of the associations. Many contributions of value now lie buried in association proceedings.

MANUFACTURER'S LITERATURE.

Our waste baskets are overflowing with discarded circulars, booklets, pamphlets and volumes which have their origin with the manufacturer of pharmaceutical preparations, and the exploiters of drugs and medicines.

Commonly this, like other pharmaceutical literature, unless it offers a bargain, remains unread. Examination of these productions shows that they are often excellent examples of the printer's art. At times they represent years of research by trained workers in putting them together. The world has been explored, statements and results have been carefully considered and verified.

If one desired to review the history, or to collate the facts upon many drugs and medical agents, as, for example, the cascaras, coca, hydrastis, or in respect to the serums, antitoxins and the glandular substances, he would find it laid before him in full in the manufacturer's literature.

To this type of publication much credit is due, and it is to be hoped that in some way it may be collected and preserved for future use.

BOOKS.

For the real and the permanent in literature we must look to the book. The preacher's trite saying, "Of the making of books there is no end," applies alike to ancient and to modern pharmacy.

Of old there was the herbal—the hand-book. Nowadays we have the text-books, the manuals, the pharmacopœias, formularies and dispensatories. These go to make up literature, but they are restricted to a utilitarian aspect.

We have a few, far too few, books dealing with the historic side of pharmacy, mostly in the French and German languages. The outstanding historical work in English is Wooten's "Chronicles of Pharmacy."

It is to be regretted that no writer has dealt with historic pharmacy as Dr. Walsh has delineated medicine in his "Cures" and "Old-Time Makers of Medicine"—with accuracy and yet with good natured banter and humor. We might wish that some author would depict pharmacy in such a manner as Bolton has covered alchemy in his "Follies of Science."

We could use more stories on the order of Wells' "Tono Bungay," with its glimpses of life in an English drug shop, and the inner workings in the exploitation of a patent medicine. In a novel carrying all the elements of passion, love, politics and religion, Sir Harry Johnston wove into "Veneerings" a plot based on the cultivation of drugs and the exploitation of modern remedies.

We have not too many, but a goodly supply of, stated treatises that are educative and authoritative. Perhaps we would be tempted to read more about pharmacy if there should arise writers who, with vigor, artistry, imagination and humor,

would paint for us pictures of pharmacy as it really exists and moves amid its worldly and human surroundings.

Through the story of pharmacy rightly interpreted will be found not alone commonplace science, but narrative, laws, chronicles, politics, religion, romance, drama, epic, poetry and song—all forms of literature that touch humanity and delineate life.

Pharmacy, pure and simple, occupies but little space in romantic literature. Fiction writers have not dealt very kindly with the pharmacist. The apothecary as pictured by Shakespeare and other writers, is wan, lean, tattered and hungry. In Dickens' works he is made up in looks, voice and manner to appear as the "haunted man."

With many writers the apothecary is associated with poisoners and criminals. From a modicum of scientific knowledge the novel maker constructs a pharmacopœia of his own and, as in the "Monte Cristo" of Dumas, invests drugs with fabulous and impossible powers.

In the true and inner story of any drug, from behind the counter of any drug shop, lies the mysterious, the marvelous, the seemingly impossible—all the elements needed for the romantic tale.

LIBRARIES.

The literature of pharmacy is not wholly covered under the catalog designation—Pharmacy. Its scope is wide, broad and deep. Pharmacy is interwoven into the structure of the healing art, its meshes extend far into the realms of science.

The literature of pharmacy must be sought for in medicine, in the physical sciences—biology, chemistry, philosophy, mathematics, and even in religion. In fact, everything that embraces the evolution of nature and mankind must be considered in a search for the literature of pharmacy. To explore one phase of this literature would require more than one lifetime; it would require many lifetimes to even classify and review it.

The practical pharmacist has little care or comprehension of the literature of his calling. In the average drug store the pharmacopœia, the dispensatory, a recipe book and a few works of reference constitute the library.

The "best sellers" are the textbooks, and to these writers and publishers give their attention.

In the preparation of this paper an attempt was made to survey the pharmaceutical literature available to American students of the art. It was found impossible to complete the task, but certain facts obtained may be of interest.

The Army Medical Library at Washington is believed to contain the largest collection in the world on medicine and allied and associated sciences, consisting of over 300,000 bound volumes, and over 500,000 unbound volumes, together with a large collection of medical portraits and prints. About 4000 of these volumes are devoted to pharmacy.

From this Library emanates that wonderful production known as the "Index Catalogue," the most complete and comprehensive work of its character in the world. In this Index will be found bibliographies of medicines and allied sciences, including pharmacy, in practically all languages. The pharmaceutical titles in this Catalogue run into many thousands.

This Library is available to visitors for research and study, and is conducted under systems which make the volumes readily obtainable. Volumes may be obtained through local medical or public libraries through the inter-library loan system.

In several centers of the United States there are substantial medical libraries, all of which contain a certain amount of pharmaceutical literature.

It is of interest to note that the fifty-year collective index of the AMERICAN PHARMACEUTICAL ASSOCIATION, for the period 1851–1902, contains over 55,000 titles, and over 70,000 references covering the pharmaceutical literature of the world.

The colleges of pharmacy reporting to the writer gave a total of about 150,000 volumes relating to pharmacy and allied sciences in their libraries. Some of these colleges are connected with universities, giving them the advantage of the university library in general sciences.

All of the colleges of pharmacy reported having American journals relating to pharmacy on file. Twenty-six reported no foreign pharmaceutical journals kept on file.

Only a few of the pharmaceutical libraries bind their journals systematically. The problem of binding journals is becoming a serious one for libraries on account of the expense and the room required.

Some of the libraries deem that in many instances journal literature is ephemeral and often repetitive, and thus not to be considered as permanent literature.

Six colleges do not encourage students to make contributions to pharmaceutical literature; forty-six colleges do encourage their students in this respect.

Fifteen colleges reported that the alumni made use of the college library.

Many of the colleges reported that the extension of the courses had given students a greater opportunity to use the libraries.

Several of the colleges have good systems for the assistance of students in library work.

A most unique library relating to pharmacy is the Lloyd Library, Cincinnati, Ohio, established and given to the world by the members of the Lloyd family. It contains over 52,000 volumes, about half of which are pharmaceutical. This Library is very complete in odd, scarce and unusual volumes, in historical literature in sets, volumes of proceedings, and in its collection of American and foreign journals. This Library is a great storehouse of pharmaceutical literature and is accessible to every student and searcher.

NEW FORMS OF LITERATURE.

There is coming a new form of pharmaceutical literature. This is taking shape in addresses on pharmacy given before Kiwanis and other social clubs, in speeches to radio audiences, and in other ways. Newspaper and magazine articles offering pharmacy as a theme are beginning to appear. Pharmaceutical bureaus are sending to newspapers and magazines matters of public interest pertaining to pharmacy.

Through this means the calling is placed in a proper light before many hundred thousands of readers and hearers.

Still another style of literature is presenting pharmacy in a dramatic form. LaWall, Eldred, Ruth and some others have staged pharmacy in plays and tableaux,

with excellent effect. Undoubtedly, the dramatization of pharmacy will secure for it a hearing.

Any pharmacist, if he will, can establish a Pharmaceutical Bureau in his own town. Whenever a misstatement is made in regard to the drug trade, when the calling is classed with bootleggers and with dope sellers, this is the opportunity to unite with the editor and set things right.

The local paper should carry a notice of the meeting of a pharmaceutical association, and to this should be added the names of local members and the positions which they occupy.

When a pharmacist is made an officer or a committeeman, when he makes a report, an address, or reads a paper, these are news items that should appear in his local paper. Such things would give a lift to pharmacy and are a boost for the individual.

Shrewd politicians keep the press well supplied with photographs and news items. Every pharmacist should establish his own local press agency.

The newer forms of pharmaceutical literature, especially as pertaining to the enlightenment of the public, are full of promise.

AS IT APPEARS TO THE READER.

The reader of pharmaceutical literature assumes the right to criticize. The author in return retorts to his critic, "Write a better one."

The larger bulk of printed matter offered to the reader is unattractive from a typographical standpoint. It is put together with solid type in long paragraphs, heavy and redundant in words, repellent to the eye, and tiresome to the brain. Only when the urge is strong will the reader venture to dig through either book or magazine. Perhaps there is too much of it.

Scientific dissertations appear to be cast in a rigid mould which no writer ventures to change. In many instances the author's aim seems to be directed towards forestalling criticism. He gives pages of puzzling tables and long drawn out detail as to methods followed in his investigations. In the end he foregoes making conclusions or interpreting results, possibly in the fear that the reader will not agree with them.

The terms and the language of such expositions are usually those of the expert, beyond the ken of the average reader. Possibly all this is correct. They are written from a laboratory point of view; they are intended for an audience having skill equal to that of the writer; they are beyond the grasp of the average reader.

Stated volumes related to pharmacy are constructed with solidity and rigidity. Their pages are crowded with text matter, largely encyclopedic in character, usable only as works of reference. One finds in the pages descriptions and statements that have been repeated for centuries, put down without variation in form or phrase.

Sometimes it is feared that the writer simply follows precedent, and erroneous statements are passed on, unverified and unchallenged. Modern volumes are illustrated, some of them profusely, thus relieving the solidity of the text.

The ancient volumes, as shown in the herbals and so-called dispensatories, were made attractive by their quaint and highly artistic illustrations. The classic authors spoke as with the authority of the gods. They believed that their statements were irrevocable and unchangeable. It is to be admitted that in many,

many instances their conclusions have passed through the centuries unchanged and uncontradicted. Their concise, clear definitions and epigrammatic sayings, even when translated, form delightful reading.

Medieval writers and those of the later centuries, particularly up to the 18th, not only made their books attractive through pictures, but the authors enlivened dull descriptive text with reflections—philosophic, religious, moral and humorous. Their pages are filled with humanities, entertaining and enlightening and worth reading centuries after they were written.

As yet no writer has arisen to place pharmacy in a modern setting, as has been done in other arts. We need an "Outline of Pharmacy," along the lines of the 20th century "Outlines of History," "Outlines of Literature," "Outlines of Art." We need volumes that we can take up for an hour and find in them edification and pleasure.

NEW READERS WANTED.

The thing that seems to be needed in pharmaceutical literature is more readers. There is need to redeem the enormous waste in the volumes that remain unread. There is need for utilization of the vast energy that now lies dormant in the printed page.

To read and inwardly digest pharmaceutical literature will give us better pharmacists and better merchants. In part, the pathway to better clerks, better salesmen, better business and better pharmacy lies through the tangled mass of books and journals. Amid this labyrinth the younger reader may well exclaim, "How can I understand unless some man shall guide me?"

An old preceptor made it a practice to place a book or a journal in the hands of an apprentice, point out a chapter or an article, talk about it and tell the young man to come back in a week and discuss his own findings.

If the older generation of pharmacists do not have the time or the inclination to read the literature, our hope lies in the young. Hargraves might well tear the wrappers from his unread journals and pass them on to his clerks.

More than one proprietor has adopted a workable plan of distributing journals and books among employees, asking them to read and note any items of interest, and return the copy marked with their initials.

The college student should certainly become schooled in the use of the literature of his art. Correspondence with colleges of pharmacy during the preparation of this paper revealed some of the methods by which this is carried on in these institutions.

In some instances the library and journals are made accessible to the students without any systematic attempt to guide them in the use of the literature. The librarians in many colleges give particular attention to the younger students and guide them in the selection and the use of the works.

The teaching staff in some institutions instruct entering classes as to methods of utilizing the library. The student is required to look up references pertaining to the subject of a lecture, and in other cases he must search out and report to the instructor references pertaining to the subject under review.

In more than one of the colleges a professor gives special instructions on methods of searching and abstracting current literature. One professor, at stated

times, takes his class into the library and explains its scope and methods of use, thus converting the library into a laboratory, with the students delving into the books and journals.

One teacher, at least twice in each term, spreads before his classes some of the masterpieces of literature, ancient and modern, placing in their hands actual demonstrations of the historic background of pharmacy.

Another affable instructor invites his boys to his own house, gives them a light refreshment, during which he exhibits a few outstanding specimens of unusual books and journals devoted to pharmacy including, where available, pictures of prominent writers, and points out the way to the unexplored land of the literature of the art.

In a few colleges literary or library clubs assign subjects for research, discuss methods of utilizing the library, and guide the younger students in literary work. To forestall monotony at these meetings the romantic, picturesque side of pharmacy is shown forth in the lore of magic, alchemy, poisons, astrology and like themes, not forgetting the historical side, illustrated in picture and story.

For the older school of pharmacists pharmaceutical literature was a substitute for the college class room. For the present-day student it should form the basis of a life long post-graduate course.

For the young, who have not yet realized the value of the literature of their art, and to whom perchance general literature is more attractive, we might suggest that they take up the story of alchemy and pharmacy as revealed in Chaucer, Shakespeare, Ben Johnson, Scott, Dickens, Thackery, and a host of other weavers of romantic tales.

Pharmaceutical literature is so abundant as to be bewildering, and the new reader is perplexed and discouraged at the lack of coherence and the flood of repetition. The younger reader can perhaps work out according to his individual bent what line he will pursue. No one would desire to select for him. If he attempts to cover all lines he will become entangled and make small gain. We can only offer suggestions born of experience. Let him faithfully read one journal in order to keep abreast of his advancing art and the ever changing conditions of the calling.

If he is studiously inclined let him select one subject, one drug, one chemical, one preparation, one phase of pharmacy, and explore that from the beginning down to now. Such an attempt will possibly occupy years of time, but it will be well spent, and it will afford the searcher many happy hours. He will be lead through and even beyond the entire realm of pharmaceutical literature, and ought to emerge well versed along the lines of his art.

The literature of pharmacy must have readers or pass out of existence. We are told that somewhere from three to five thousand young men and women enter the ranks of pharmacy each year. As far as possible all of these should be readers and students of the literature of the art. How else can they hope to keep pace with its progress?

A consistent, studious reader of pharmaceutical literature will maintain his standing as a pharmacist. Failing to read the modern journals and literature the druggist will fall behind in methods of good merchandising.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

CENSUS OF BUSINESS COSTS.[1]

The following table lists the typical operating expenses of drug stores in and around Philadelphia. These figures are not theory or guesswork; they are compiled from the actual facts generously supplied by our members and customers.[1]

More than 200 returns were received and of these 169 were in sufficient detail to be included in this summary. This response is far higher than any ever before made by druggists in any part of the country and represents a sufficiently large proportion of our members and customers to serve as a guide for you.[1]

The figures below represent the most typical or usual results results obtained in and around Philadelphia. How do your results compare with these? (To make a comparison simply divide your figure for total annual sales *into* your year's figures for each of the expenses listed. The result is your per cent expenditure for that particular item.)

Sales	100.0
Cost of merchandise sold	64.0
Total operating expenses (divided as below)	27.8
Salaries (including owner's salary)	19.5
Owner's salary	9.5
Rent	4.0
Light	0.6
Heat	0.5
Insurance	0.2
Taxes	0.2
Interest on borrowed money	Negligible
Losses on bad debts	Negligible
Repairs	0.2
Depreciation	1.4
Delivery	0.1
Advertising	0.6
Miscellaneous	0.5
Profit	8.2
Turnover of merchandise stock	2.6 times a year

To determine your turnover, divide the average amount of merchandise you had on hand in 1925 (at cost price), into the *cost* of all the merchandise you sold in 1925. The resulting figure is your annual turnover.

Put your own percentage beside those printed here. If you did better on any of them, put that down as an advantage you have and try to keep it. If you are lower on any figures, remember these percentages are not some impossible ideal, but actual results obtained in 1925 in and around Philadelphia. Then ask yourself, if so many other druggists close to me can get these results, why can't I?

---

* Instructor of Merchandising, Wharton School of Finance and Commerce, University of Pennsylvania; Lecturer on Business Administration, Philadelphia College of Pharmacy and Science.

[1] This article presents the first results of the Druco Census of Business Costs and is reprinted from *Druco News*, March 1926, published by the Philadelphia Wholesale Drug Company. This census is being made for the Philadelphia Wholesale Drug Company by Paul C. Olsen.

These figures are not the best results reported! Some stores reported a salary expense as low as 9 per cent of sales. Others *paid* rent as low as 1 per cent of sales. Turnovers as high as 8 per cent were shown. A further analysis is being made of the results reported by unusually successful stores to bring out just which expenses they have cut most.

Similarly, an analysis is being made of the stores which reported results not as good as the typical figures printed to bring out just which expenses were higher than usual in these stores. This will give you, on the basis of actual facts, an idea of what expenses must be watched most particularly to insure greatest success.

Another question to be answered by this census is: Do profits increase as sales increase? In other words, are large stores more profitable proportionately than small stores? The answer to this question is vital to the man who is working to try to increase the size of his business.

Other questions to be answered are as follows:

Are there any differences in the expenses of transient, neighborhood and suburban stores?

Do the larger stores get a faster turnover than the small stores?

Is there any variation in expenses between large and small stores?

How important is charge business?

GUIDE POSTS TO PROFIT AND PROGRESS.

SOME FACTS AND FIGURES TO WATCH TO PROTECT PROFITS.

1. *Sales by Departments and Total Sales.*—Compare with previous corresponding periods.

2. *Charge Sales.*—Compare with money received on account during the same period. This is a measure of the rate at which charge accounts are being collected.

3. *Merchandise Purchases.*—Compare with previous corresponding periods and with sales. A marked increase in merchandise purchases for no apparent purpose may be an indication of an increasing inventory and consequent slowing down of the turnover. On the other hand, increasing purchases with no corresponding increase in sales may be the indication of goods sold at too low prices or waste or pilfering of stock. A marked decrease in merchandise purchases for no apparent purpose may be the indication of an unwarranted decrease in the stock on hand or an increasing accumulation of unpaid bills. Unusual fluctuations in merchandise purchases are a cause for immediate investigation.

4. *Expenses (Classified and Total).*—Compare with previous corresponding periods and with purchases and sales. The difference between sales and the sum of purchases and expenses is net operating profit.

5. *Cash on hand and in bank* is a measure of immediate purchasing power.

6. *Unpaid Bills.*—Compare the total amount with the figure for preceding dates.

7. *Merchandise Turnover.*—Turnover is computed by dividing the total cost of the goods bought during a period (usually a year) by the average amount (at cost price) of the goods on hand during that period. It is a measure of the rapidity

with which goods are sold and consequently of the rapidity with which profits are earned.

COMMENTS, QUESTIONS AND SUGGESTIONS ARE INVITED AND WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The Editor will also undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

SEASONABLE DISPLAYS FOR MAY AND JUNE.

House cleaning aids
Sponges and chamois
Insecticides and germicides
Moth balls, camphor, cedar flakes
Clothes bags
Cameras and photographic supplies
Stationery
Pens and pencils
Perfumes and toilet waters

THE KANSAS UNIT PLAN.*

BY J. S. CHISM.

In May 1921, in the city of Winfield, Kansas, there originated the Kansas Unit Plan. The writer contributed thereto, as one of five members of the committee which formulated what is known as the Kansas Unit Plan. It is possible that a great many of the readers have some idea of this wonderful plan.

It seemed at the time the only solution for the Kansas Pharmaceutical Association, and required much thought on the part of the committee to decide what was the best plan to inject some enthusiasm into the Association. After hours of discussion and deep thought the committee decided on a solution which was as follows:

The members of the committee pledged themselves to the support of five units, of $20.00 each. This matter was taken before the assembly and approved; at the afternoon meeting of the second day there were pledged, by the members of the convention, about two hundred units of $20.00 each, many taking five units.—*This formed the nucleus.*

The new President, at that time, decided on the following plan: He, with the Executive Committee, composed of five members, including the President, Past-(immediate) President, First Vice-President, Treasurer, Chairman of the Legislative Committee and Secretary of the Board of Pharmacy, composed the Executive Committee. The state was divided according to congressional districts—by grouping the counties accordingly. These elected a Chairman and Secretary, and by the untiring efforts of the President and the paid Secretary-Manager they were enabled to organize county organizations and sell the unit plan to each drug-store proprietor. Article four, on membership, and section three, for unit members, reads as follows: "Annual dues for all owners and managers of stores of this State is to be based on the unit plan. The annual dues are to be $20.00 per unit. The number of units

* Section on Historical Pharmacy, A. PH. A., Des Moines meeting, 1925.

that may be subscribed by any one member is not limited. The payment of dues exempts members from other dues." The annual income from dues is estimated to be about $15,000. This plan has been in existence for four years; 1925 to 1926 will be the fifth year. At this time there are about 500 or 600 paying members, some of whom are in arrears on account of business conditions. The organization charged the President and the paid Secretary-Managers with the duty to organize and make the plan effective in every county of the State.

We believe this plan is a very good one, and one that should be adopted by other States. It is our intention during the coming year to re-sign our units, for we believe that all unit holders are willing and ready to give this plan their support. Our last meeting, in Wichita, was one of the best attended and successful meetings, both from point of papers and entertainments.

The formulation and working of the Kansas plan has not been pursued without discord, for any plan involving radical changes in expenses for conducting Association affairs will have its opponents. Our dues formerly were $2.00 a year; the same applies to non-unit members now—a pharmacist, not proprietor or owner of a drug store, pays $2.00 per annum as a member of the Association. During the first year of our unit plan the Secretary-Manager was called upon to furnish information in detail relative to the Kansas Unit plan to neighboring State associations; a number of States at that time contemplating a similar organization.

A purpose of this plan is to create a reserve fund to be used for legislative purposes. Our plan was to introduce a drug bill which would protect the retail druggists in the sale of poisons, price-cutting and against all the evils of the five- and ten-cent stores. The object also was to assist manufacturers who coöperated with retail druggists, and with the Kansas Pharmaceutical Association. For example, in order to afford a living profit items retailing at 25c, 50c and $1.00 should not cost to exceed $2.00, $4.00 and $8.00 at wholesale. We found the manufacturers willing to work with us.

The coming year will conclude our five-year contract. The contract is practically a promissory note and is binding and collectable. The writer has had a conference with the new President and he is to sell the plan for the coming five years to every drug store in the State. There has been some talk of reducing the cost of units to fifteen or possibly ten dollars; this, in the writer's opinion, would be unwise as it would not provide the Treasury with a sufficient reserve, and without capital we cannot succeed. There is not a store in the State of Kansas that cannot afford to buy one unit in support of the principle. It is difficult at times to sell the unit plan to the prospect who cannot see where he will have a return of $100 for one dollar invested—he fails to understand the importance of coöperation and the value of assistance rendered by the plan.

It is to be hoped that the new President, with his Secretary-Manager, will meet with the degree of success and coöperation of the past four years. It requires a great deal of tact, ability and a lot of pep to organize a plan like this one. There are a great many druggists who cannot see beyond the horizon of their stores; they do not look forward to the good that is attained for the coming generation. There are others who give their time and money for the advancement of their profession and they have the satisfaction of knowing that they are giving their best for the profession.

THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

M. N. Ford, President, Columbus, Ohio. J. W. Gayle, Treasurer, Frankfort, Ky. Edw. H. Walsdorf, Chairman of Executive Committee, New Orleans, La. H. C. Christensen, Secretary, 130 N. Wells St., Chicago, Ill.

ACTIVE MEMBER STATES.

Alabama	Iowa	Montana	South Carolina
Arizona	Kansas	Nebraska	South Dakota
Arkansas	Kentucky	Nevada	Tennessee
Colorado	Louisiana	New Hampshire	Texas
Connecticut	Maine	New Mexico	Utah
Delaware	Maryland	North Carolina	Vermont
D. of Columbia	Massachusetts	North Dakota	Virginia
Florida	Michigan	Ohio	Washington
Georgia	Minnesota	Oklahoma	West Virginia
Idaho	Mississippi	Oregon	Wisconsin
Illinois	Missouri	Pennsylvania	Wyoming
Indiana			

GEORGIA ADOPTS COLLEGE PREREQUISITE.

The Georgia State Board of Pharmacy has adopted a ruling under an opinion rendered by the Attorney General of that State, which places Georgia in the majority column after July 1, 1927, of those states requiring graduation from high school and three-year college of pharmacy course, as a prerequisite for entrance to examination for registered pharmacist.

The Attorney General's opinion, addressed to J. T. Selman, Chairman of the Board, on which the Board's ruling is based, reads as follows:

"Referring to your verbal inquiry with reference to the right of the State Board of Pharmacy to prescribe rules governing the admission of candidates to the practice of pharmacy in this State, I have the honor to advise that:

Section 1724, of the Code of Georgia prescribes as follows:

'Said Board shall meet and organize as a State Board of Pharmacy, elect a Chairman and Secretary, ADOPT SUCH RULES, regulations and By-Laws as they shall deem necessary to carry into execution the provisions of this Chapter.'

Section 1726, setting forth the duties of the Board, provides as follows:

'IT SHALL BE THE DUTY OF THE BOARD TO GRANT LICENSES—

1. To druggists, who after three years' experience in a drug store managed by a licensed apothecary or pharmacist, shall have passed a satisfactory examination before the said Board of Pharmacy.

2. To such physicians, graduates of a regular medical college, and such graduates of schools of pharmacy as shall have passed a satisfactory examination before said Board of Pharmacy.

3. To pharmacists who have obtained licenses from such other States' Boards of Pharmacy as may be recognized by said Georgia State Board of Pharmacy.'

"It is pertinent to inquire the purpose of the lawmakers in creating the State Board of Pharmacy. Beyond a doubt, it is intended to regulate the

practice of pharmacy to the end that the people should be protected from unscrupulous prescriptionists.

"Section 1724, cited above, provides that your Board shall prescribe the rules and regulations necessary for carrying into execution the laws regulating the practice of pharmacy in Georgia. It is, therefore, my opinion that it is the duty of your Board to promulgate such rules as may be necessary to protect the people. And, if in the judgment of your Board, certain standards of education are necessary to that important end, then it is the right of your Board to prescribe such rules. I believe I am warranted in making the statement stronger, and saying it is the duty of your Board to do so.

"Trusting that the foregoing answers your inquiry fully, I have the honor to remain, dear sir,

Very sincerely yours,
(Signed) T. R. Gress,
Assistant Attorney-General."

I feel certain that I am expressing the sentiment of the entire membership of the National Association of Boards of Pharmacy as well as of all pharmacists who are looking to the future welfare and progress of pharmacy, when I congratulate the Georgia Board on its endeavor and success in the adoption of this forward step, which aligns Georgia with the progressive forces and at the same time gives to the public the protection to which it is entitled. (H. C. C., Editor)

STATE BOARDS OF PHARMACY NEWS ITEMS.

Colorado.—Joseph P. Murray of Colorado Springs succeeds Ernest J. Howard of Denver as President of the Board. Mr. Howard was elected Treasurer.

Indiana.—John A. Funk of Galveston has been made President of the Board and Bernard M. Keene of Indianapolis succeeds R. I. Beddoe of Bedford as Secretary, effective May 1st.

Iowa.—George Judisch of Ames, Ia., succeeds W. W. Haire of Fort Dodge as Chairman of the Iowa Board of Pharmacy.

Michigan.—Claude C. Jones of Battle Creek has been elected President of the Board to succeed J. A. Skinner of Cedar Springs. James E. Way of Jackson was elected Vice-President.

Nebraska.—Robert A. Hardt of Hastings has been appointed on the Nebraska Board of Pharmacy Examiners to succeed George F. Strelow of Long Pine, whose term expired.

North Carolina.—J. G. Ballew of Lewis was elected a member of the North Carolina Board of Pharmacy on April 8, 1926, to fill the unexpired term of J. A. Henderson, deceased.

Pennsylvania.—Lucius L. Walton of Williamsport, who has for many years served as the Secretary of the Board, has resigned as Secretary because of his many other duties, among them being the Presidency of the AMERICAN PHARMACEUTICAL ASSOCIATION, and the feeling that he was physically no longer able to carry the burden of these many duties. Charles F. Kramer of Harrisburg was elected Secretary of the Board to succeed Mr. Walton.

RESOLUTIONS.

The Board at a recent meeting adopted a resolution presented by Mr. Merritt relative to the retirement of Mr. Walton as Secretary.

WHEREAS, Lucius L. Walton has served as Secretary of the State Board of Pharmacy of the State of Pennsylvania for the past eighteen years, and on account of impaired health he has felt compelled to relinquish these duties, and

WHEREAS, During his incumbency he has gained the respect and affection of the retail druggists of the State. He has consistently and vigorously stood for the enforcement and the observance of all laws which have had for their object the safeguarding of the public, and

WHEREAS, During his term of office all observed that he was no ordinary Secretary; his life has been a continued self-sacrifice in the cause of pharmacy and his aim has always been the advancement of the same. He has been unusually active in promoting higher standards for our profession, therefore be it

RESOLVED, That we, his associates on the Board of Pharmacy, hereby attest our hearty wishes for a restoration to his former good health, and we hereby wish to record and convey our appreciation of his fine character, his unselfish service and his manly worth. By his retirement this board has sustained the loss of an earnest, honest, zealous, conscientious and most efficient Secretary.

Tennessee.—George M. Sadler of Clarksville has been elected President of the Board, and Samuel C. Davis of Nashville, Vice-President.

HOSPITAL PHARMACY AND ITS OPPORTUNITIES.*

BY BERTHA OTT.[1]

Though our present time is often called the hospital age, history teaches us that hospitals in some form or other existed through past ages, dating back to the pre-Christian era. So ere we divine the future let us consider the past.

Kings and other rulers supported hospitals in India, Persia and Arabia. An authentic report of pharmacies connected with these institutions relates to the hospital of Edessa in Syria, founded 460 A. D.

The oldest hospital in the world that is still conducted as such is the famous Hotel Dieu (House of God) in Paris founded about 660 A. D. Schelenz, in his "History of Pharmacy" in reference to Hotel Dieu says: "Sisters occupied positions in the drugroom and sold remedies especially prepared in their hospital pharmacy, which was as well equipped as any pharmacy in Paris." In the centuries of its existence this institution has preserved more records relating to the history of the hospital than any other institution. The oldest hospital in the New World is Jesus Nazarine in the City of Mexico, founded in the year 1527 by the Spanish Conqueror Cortez. It is still conducted as a hospital, largely with the endowment left by the Conqueror. In spite of its age the hospital is being carried on in accordance with the best modern practice.

In Italy, France, England and Germany, the larger hospitals became identified with universities and were utilized for medical teaching. The St. Thomas and St. Bartholomew of London thus became the most noted hospitals in the world. The oldest hospital in the United States is the Pennsylvania Hospital, in Philadelphia, established in 1751, and Benjamin Franklin was its first clerk. In 1752, Jonathan Roberts was duly appointed to preside over the recently established apothecary shop of said institution and John Morgan, his successor, became the father of Medical Schools of America. Bellevue Hospital of New York received its charter in 1771; later on, followed the Massachusetts Hospital in Boston. Since that time innumerable hospitals have sprung up in all parts of the country, so that almost every city, town and village has its own appointed hospital adapted to its needs.

As an illustration of the influence of hospital pharmacy in our country is the

---

* Read before Cincinnati Branch, A. PH. A., March meeting, 1926, and printed by request of the Branch.

[1] Pharmacist at Bethesda Hospital, Cincinnati, Ohio.

fact that the immediate forerunner of our United States Pharmacopœia was the pharmacopœia of the New York Hospital, published in 1816.

Charles Rice, connected with the Bellevue Hospital Pharmacy for many years, was chairman of the Pharmacopœial Revision Committee in 1880, 1890 and 1900. Martin I. Wilbert—for nearly 20 years pharmacist at the German Hospital, Philadelphia, now called the Lankenau Hospital—carried on a large amount of investigation for improving pharmaceutical formulas. He also utilized his opportunities to improve pharmaceutical technique and was one of the first to study radio-activity. He was a member of Council on Pharmacy and Chemistry of the American Medical Association, and served as Secretary of the Section on Pharmacology and Therapeutics. He was one of the few men who served as connecting link between the two professions, medicine and pharmacy. John E. Groff, pharmacist of Providence Hospital, Providence, R. I., served as instructor to nurses and is the author of the first "Materia Medica" for nurses.

We deem it proper to pay tribute to the first registered woman pharmacist engaged in hospital pharmacy in our land, namely, Dr. Susan Hayhurst. She graduated from the Women's Medical College in Philadelphia in 1857. While Attending Physician at the Women's Hospital, she became interested in pharmacy and decided to enter Philadelphia College of Pharmacy, graduating in 1883. She then served 33 years as pharmacist at the Women's Hospital. Being a born teacher, she utilized her knowledge and wide experience by employing young women as assistants who were unable to secure positions to gain practical experience in pharmacy. She thus gave instruction and aid to 65 young women.

Coming to hospital pharmacy of the present day, responsibilities and opportunities are even greater than of the past, for we are living not only in an era of hospitalization but also of standardization. For example, the American Hospital Association is continually making intensive study regarding the administration and improvement of equipment of hospitals. The American College of Surgeons has for several years been inspecting the institutions of our country, outlining a program for the improvement of laboratories, hospital records of patients, and staff organization. The American Medical Association through its Council of Medical Education made a special survey of hospital interneship and published an outline of "Essentials for Interne Training." Hospitals which are thus approved will be granted the privilege of training them.

The American Nurses' Association and National League of Nursing Education have long been at work raising the standards of nursing. And what of the standards of hospital pharmacy? Pharmacy must progress step by step with its allied professions represented in the hospital. Since pharmacists, active in hospitals and similar institutions, have found a home in the Section of Practical Pharmacy and Dispensing of the AMERICAN PHARMACEUTICAL ASSOCIATION, we have faith that this great "Mother Organization" will encourage and support every undertaking for the advancement and betterment of hospital pharmacy.

It is really the task of the hospital pharmacist, as connecting link between the AMERICAN PHARMACEUTICAL ASSOCIATION and the National Hospital Association, to present the status of hospital pharmacy before the executives of institutions, regarding the employment of registered pharmacists, to secure recognition of pharmacists on hospital and medical staffs with such remuneration as will inspire many more

pharmacists to join the ranks of professional workers in hospitals. If that which is required of them is rightly presented to hospital executives, in most cases there will be no difficulty in winning their approval of whatever will enhance the honor and welfare of their institutions.

The hospital field is a large one—at the present time representing nearly 8000 institutions of healing averaging 800,000 beds, with a yearly increase that is astounding. Here then is a vast field of usefulness for professional workers. The modern hospital offers the pharmacist every opportunity for "true pharmacy;" every convenience regarding facilities and necessary supplies for manufacturing and testing of pharmaceutical preparations will be granted.

The center of attraction, the one chief consideration, the one to whose welfare all else must be subordinated in every institution, is the "patient." The gravest responsibility in this great trust of human life lies in the hands of the physician, the pharmacist and nurse; this responsibility at times is extended to the pathologist, bacteriologist and radiologist; whatever the case may be, the pharmacist always stands between the physician and the nurse. Hence, we feel keenly the importance of our calling and realize that it can only be properly served by those who have "true pharmacy" at heart, love their profession and will give whole-hearted coöperation to physician and nurse in this great vocation of life-saving.

The pharmacist in hospital service is required to meet new conditions continually. With the hospital laboratory at his command he may engage in research work of his own, also it may be his privilege to work out new formulas suggested by physicians, who find preparations inefficient in producing desired effects.

Beside the regular prescription work and making up stock solutions for floor supplies in the hospital, the pharmacist's daily tasks will include such duties as the preparation of sterile solutions for local anesthesia; sterile solutions and ointments for eyes; sterile solutions for intramuscular and intravenous use; preparing solutions for the pathological laboratory; solutions for preservation of specimens; solutions for developers in X-ray work; testing of water and milk supply for hospital use; soap for laundry use, etc. His field is extensive and he can make his work very interesting if he so desires. In the small hospital the pharmacist may have charge of purchasing and stocking of the hospital supplies. In most hospitals the pharmacist is placed on the teaching staff—in the smaller hospitals as instructor of nurses in materia medica, chemistry and other branches. When connected with an institution which is affiliated with a College of Pharmacy, as for example the Lakeside Hospital in Cleveland, it will be required of him to instruct pharmacy students in practical pharmacy. Again, if his institution is a teaching center and connected with a Medical College, he will have the privilege of instructing medical students in prescription work and pharmacy; such a teaching center is found at the Cincinnati General Hospital.

The position of a pharmacist in a modern hospital should appeal to many young men and women who should be encouraged to prepare for professional work in pharmacy. We heartily commend the suggestion of C. E. Austin, chief pharmacist at General Hospital, Cincinnati, in an article in the *Druggists Circular*, 1921, that a course be arranged in colleges of pharmacy where students may acquire training in subjects pertaining to hospital work.

As preventive medicine and nursing advance, the hospital of the future will

be more than a hospital, namely, health-teaching centers of their respective communities. The writer has spent twenty-two years in the Bethesda Hospital Pharmacy and has seen this institution develop from a 65- to a 300-bed hospital. I count it a privilege that the opportunities of the pharmacist in hospitals also apply to our pharmaceutical experience. Our institution has this outstanding peculiarity, that its staff is composed of physicians and surgeons representing "Allopathic," Homeopathic and Eclectic Schools of Medicine, giving us the varied experiences in their different methods of prescribing. Part of our work consists of homeopathic specifications of preparations and we filled about 6000 regular prescriptions during 1925, besides making up most of our U. S. P. and N. F. preparations, in addition to our regular daily routine work. We are happy to hold the confidence of our physicians and often are asked to work out formulas for them of preparations which did not produce desired effects on their patients.

The amount of work in our institution requires two registered pharmacists. Miss Cramer teaches a promising class of nurses in chemistry while I try to inspire them with the importance of Materia Medica.

PHARMACY AS PRACTICED IN THE HOSPITAL.*

BY FRANCES GREENWALT.

I have chosen a rather broad and, perhaps, an ambiguous title for my paper, because there is so much to be said about this important branch of our profession.

After seven years of experience as a hospital pharmacist I have become fully aware of the fact that hospital dispensers are not receiving sufficient recognition, either from the pharmaceutical profession or from the heads of the hospitals and institutions employing them.

Wherein does the fault lie? This question has been asked many times in the past few years, particularly since hospital pharmacists have begun to take an active part in the affairs of the AMERICAN PHARMACEUTICAL ASSOCIATION, for it was just a few years ago, at the meeting in New Orleans, that a few hospital pharmacists became sufficiently interested in the national organization and began to take a more active part in its affairs.

At both the Asheville and the Buffalo meetings, hospital dispensing became the subject of lengthy discussions and it was an admitted fact that hospital pharmacists belong to a specially trained group of the profession. They are specially trained—but how do they receive this special training? By diligent application and by ferreting out things for themselves.

There are many pharmacists, especially women, who do not care to work in the retail stores. Their chief desire is to secure hospital positions; yet these pharmacists, in order to become registered, must get their practical experience under a registered pharmacist, in a retail store, before they may go before the State Examining Board. Such practical experience often consists of soda fountain work, selling candy, sundries, etc., and filling only an occasional prescription.

I have not exaggerated the situation at all. Three months of my own experience required for registration were spent in just that way.

---

* Parts of a paper read at the February meeting of the N. W. Branch, A. PH. A., at Minneapolis.

If the registered hospital dispensers were given the recognition due them, many an unregistered clerk would be glad to serve his apprenticeship in a hospital and acquire some real pharmaceutical experience. A post-graduate course might even be added to our college curriculum, whereby those who wish to become hospital pharmacists might serve an interneship in some hospital under a qualified registered dispenser.

Hospital dispensing is not the same as that of the retail store. In the average store one is seldom asked to make any sterile solutions, or any of the stains and reagents used by the laboratory technician. In the hospital the pharmacist is catering to fifty or more doctors, among whom are some of the leaders of the medical profession. Some of these men are doing research work or are trying out some new systems of medication, and it is up to the pharmacist to be posted on all of the latest medicinals. He must be able to answer many questions regarding the composition, source, action and toxicity of all new products and be able to prepare them for medication.

Patients in hospitals are usually quite ill and the best and most careful attention and medication should be given them. Sometimes it is even necessary for the pharmacist to give a word of caution to the attending nurses, for some of the doctors require a little checking.

I recall a prescription ordered not very long ago for a four-year old child. The dosage of Tincture of Digitalis was an adult dose and the dosage of Salicylic Acid was a maximum adult dose. I telephoned the doctor for a check on the prescription and he said he wished the prescription filled as written. I felt certain that if the medicine were taken as often as directed toxic conditions would result, so I took the liberty to tell the attending nurses to watch for toxic symptoms and to stop the medication and report to the doctor as soon as such symptons appeared. In this particular case Nature protected the innocent, for the child would take only half of the first dose. He vomited what he did take and the nurses did not try to give him a second dose. When the doctor made the rounds the next day he discreetly discontinued the medication.

Many times a sterile preparation is required for intravenous medication. I doubt very much whether the average store is able to furnish the double distilled water required for such, or whether it has the equipment necessary for preparing these solutions.

I am also convinced that not all pharmacists know how to prepare good laboratory stains and reagents, for I have been asked by the doctors to make stains for them when they have been unable to purchase reliable ones elsewhere.

Granting then that much skill and training are required of the hospital dispenser, it is an unfortunate state of affairs that hospitals are not required to employ registered pharmacists. Our various State Boards are busy enforcing the pharmacy laws covering the retail stores. We know that a drug store must have a registered pharmacist in charge at all times, but in some hospitals any one is permitted to dispense drugs. In a hospital where no pharmacist is employed such dispensing is usually done by a nurse or an interne, and some serious mistakes have been made by these untrained people. These mistakes seldom become known to the public. Perhaps it would be well if the public did become a little better acquainted with these conditions. A patient, out of the hospital, has the privilege

of taking his prescriptions to a reliable and registered pharmacist, but in the hospital, they are filled in the dispensary.

Does it not seem that some sort of propaganda should be started right now to educate the superintendents and hospital boards, that have been backward, to realize the importance of pharmacy? As yet, so far as I know, no hospital is required to have a registered pharmacist in order to place it in Class "A." Nor is it required to have a graduate dietician. However, the hospital heads realize the importance of diet in disease, and all of the larger hospitals, and many of the smaller ones, employ dieticians. It is surely just as important that the patient receive properly prepared medicines as it is that he receive properly prepared food. I believe that the pharmacists themselves have it in their power to secure the good will and the coöperation of the hospital heads if they but make the effort to do so.

As the situation is now, comparatively few hospital pharmacists have the recognition they should have, and this is necessary in order that they may have a full appreciation of their obligations and render the best service. The public is concerned in providing a proper status and broad-minded physicians and surgeons realize that status has much to do with good service. Too frequently the social standing of the pharmacist is an uncertain quantity, and this not only hurts pharmacy, but more so the hospitals and those served by them.

In conclusion I wish to say that there are three things I hope to stress in this paper: First, that time spent by an unregistered person in a hospital pharmacy, under the supervision of a registered pharmacist, should count in securing registration. Second, that all hospitals should be required to have the services of a registered pharmacist for all dispensing. Third, that hospital pharmacists receive the recognition and the salaries which are due them in proportion to their educational qualifications and their experience.

Some hospital superintendents and boards may say that they have not enough work to warrant having a registered pharmacist. In answer to them, I would say that there are some hospital pharmacists who are prepared to do other skilled work besides pharmacy; some of them are also anesthetists, or X-ray technicians or laboratory technicians. A small hospital would be financially ahead if it were to employ one person at a fair salary who is able to do the work of more than one department.

PRESCRIBING HEROIC DRUGS IN BELGIUM.

The *Chemist and Druggist* of April 17th states that Article 15–30 of the Belgian instructions of 1885 to doctors and pharmacists regarding the prescribing and dispensing of heroic drugs have been abrogated by a Royal Decree, and replaced by the following new articles: In prescriptions the amounts must be stated only in grams, centigrams, milligrams, or in drops. The prescription must be signed and dated by the doctor, and as far as possible should contain directions for use. When a doctor prescribes an heroic medicament in excess of the maximum dose given in the pharmacopœia, he must write out the amount in full and append thereto his signature. Should a doctor prescribe an heroic medicament in excess of the maximum dose given in the pharmacopœia without complying with the foregoing requirement, the pharmacist must assure himself of the prescriber's intention. Should he not be able to communicate with the latter, the pharmacist shall reduce the amount to the dose given in the pharmacopœia; at the same time he shall immediately inform the writer of the prescription of the fact.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

TEACHING AND EXAMINING.

BY ZADA M. COOPER.*

A short time ago I listened for a few minutes to a lecture in an extension course for grade-school teachers on "How to improve the written examination." I heard neither the beginning nor the ending and little of what I did hear has a direct bearing on college examinations, especially along professional lines. However, some of the statements presented food for thought. "If we know how to teach a subject we can test our students' knowledge of it." If we *know how* to teach—shall we not then scrutinize our own teaching methods and then shall we not study the methods used by others, especially those teaching similar subjects?

The ASSOCIATION'S plan of devoting a part of the time of our annual meeting to teachers' conferences is more than justified. Apropos of those sessions, I am wondering if teachers in ASSOCIATION colleges have read the report of the sessions of the conferences at the last annual meeting as printed in the 1925 Proceedings. If reading them proves as valuable to the readers as editing the discussions was to the Secretary, then they have been very helpful. Listening to and participating in such discussions ought to be much more so. In my opinion the good they can do is something that cannot be measured. Teachers of pharmacy owe it to themselves and to the institutions they serve to attend these meetings.

"Scientific examining must wait on teaching becoming a science." The speaker only reiterated what we all know, that teaching is far from being a science. He would have us spend more time in perfecting our teaching or, he would have us spend it first, and then try to improve our examinations afterward.

Another thought, often in our minds, comes again with perhaps a slightly different emphasis, that informal conferences between college instructors and State Board examiners should be the rule rather than the exception. Granting that members of examining boards know better than teachers *what* a registered pharmacist should know, may it not be possible that we who teach, imperfect though our teaching is, could tell them something about *how* questions should be asked so that they will test the candidates' knowledge of any subject? In most cases board members have not been teachers. If the psychologist-educator was right in saying that one who can teach well can examine well and if board members will tell us what they believe candidates for registration ought to know, our combined efforts should do much to reduce the percentage of failures in board examinations very materially.

College curricula are planned to take care of all lines of pharmaceutical endeavor. The two-year course, now almost a thing of the past, had the fundamentals reduced to the irreducible minimum. This minimum was for all who would go into pharmacy, for the seventy-five per cent who expected to become retail pharmacists and for the twenty-five per cent who would go into other branches.

Knowing *what* the examining boards think a registered pharmacist should

* State University of Iowa.

know would enable teachers to stress those points or, at least, to direct attention to them without in any way detracting from other things that are being taught or changing the plan of courses. The National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy have a joint session each year and many things of importance come up for discussion. It is probably out of the question to think of getting into a crowded convention week another joint session devoted entirely to these questions of teaching and examining, but surely some phases of them might well be a part each year of our session.

Returning to the lecturer's theme of how to improve examinations, in preparing any examination there should, of course, be a very definite objective. The scope should be decided upon and the major topics analyzed and outlined. Sub-topics should be ranked in the order of their merit. Once such an outline is prepared, sub-topics of lesser importance can be dropped until the examination conforms in length to the valuation placed upon it, that is, whether it is expected only to indicate progress or whether it is final for the subject, and, also to the time allotted for writing it. Hard questions should appear last, because the reverse is likely to discourage or frighten a student and either would affect the result. "Every examination," he said, "should be one of three types: the false-true, completion, or multiple choice." Several years ago the writer attempted to prepare examinations that would conform to these types, but with indifferent success. It would be interesting to know how much others have been able to do in writing College of Pharmacy examinations like these that seem to be the ideal of the psychologists.

An examination should test a student's ability to reason and to apply fundamental principles to the question in hand. Using the knowledge of facts and principles in an examination should be a part of the real training which will be the test in life after college. No group of teachers can foresee the problems which will confront their students in the practice of their profession. No group of teachers can know or can teach *all* of the facts that will be needed. We can try to teach what we do teach in a way that will train students to think and act in any situation. We can try to teach them how to find the facts and how to apply the principles they have learned. Life is that kind of an examination. In col'ege we are asking what they know; in life, they will be asked what they can do. What that may be is influenced in some degree by how we teach.

GUARD THE WILD FLOWERS.

The acquaintance of pharmacists with botany instils a love for flowers and should persuade them to assist in the preservation of wild flowers and also in ridding sections of poisonous plants. It is a movement in which pharmacists can be helpful. There is more or less general destruction of plant life from purely selfish motives, and there should be some who will exhibit an active interest in the preservation of our wild flowers, just as in maintaining the beauty of parks. Aside from the beauty there is the opportunity of becoming better acquainted with nature and applying the information in practical ways. In killing off plant life our sources of water supply may suffer and, in time, we may miss these carbon monoxide absorbers. No class is more closely drawn to nature than pharmacists, because so much of the materia medica is produced in nature's laboratory.

BROOKLYN COLLEGE OF PHARMACY.

Governor Smith, New York, has signed a bill permitting the Kings County Pharmaceutical Society of Brooklyn to increase its holdings from $150,000 to $1,500,000. The purpose of the increase is in the interest of the larger Brooklyn College of Pharmacy.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

Article IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

BALTIMORE.

The March meeting of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Hotel Emerson on March 26, 1926, 8:15 P.M., President R. L. Swain presiding.

Dr. John Glassford, Chief Chemist of McCormick & Co., Baltimore, Md. was the speaker, his subject being "Essential Oils and Synthetic Perfumes."

The speaker compared the pleasures of the sense of smell with those of sight and hearing, mentioning that, although the pleasures of the sense of smell are secondary and auxiliary to those of sight and hearing, they enhance their enjoyment by a subtle charm, unobtrusive yet insistent, like the delicate touch of flavor which the skilled cook adds to the dainty dish and which we do not notice but would miss greatly were it not there.

He referred to the classifications by Henning of the six elementary odors, namely: Spicy, flowery, fruity, resinous, foul and scorched, and the more elaborate classifications of odors by Zwaardemaker—ethereal or fruity, aromatic, fragrant or balsamic, ambrosial, alliaceous, empyreumatic or burnt, hircine or cheesy, repulsive, and nauseating or fetid. Following the above-mentioned classifications with modifications, Dr. Glassford divided the essential oils and synthetic perfumes into eight classes: Ethereal or fruity oils, aromatic oils, camphoraceous oils, light flowery oils, heavy flowery oils, balsamic perfume materials, ambrosials as musk and ambergris, and pungent oils, as oil of mustard.

He explained the different means of obtaining essential oils and other perfume materials, such as mechanical expression, distillation, extraction by means of a volatile solvent, absorption by hot fat and absorption by cold fat, and pointed out the advantages of each process in connection with the particular oil or perfume.

Dr. Glassford enumerated in detail the constituents of essential oils, and stated that although hydrocarbons are of very minor importance as perfume materials, they make up the great bulk of many essential oils. He mentioned that alcohols are a far more odorous class of compounds than terpenes, and enumerated some of the alcohols, as well as the esters of these alcohols, found in our perfumes. He mentioned that in point of odor value the aldehydes are the most important of all perfume constituents or materials, and that the synthetic production of aldehydes in a state of purity has revolutionized the art of perfumery and the manufacture of artificial flavors. Natural flower and fruit oils can now be reproduced with remarkable exactness with the aid of aldehydes. He further considered other constituents such as the ketones, phenols, oxides, lactones, nitrogenous perfume materials, including the three artificial musks; the sulphur compounds, and the acids, as benzoic, valerianic, etc.

The speaker cleverly compared all the perfume materials he had considered to notes on the various musical instruments at the disposal of the composer, and the finished perfume to a muscial symphony, stating that in the same way, if the instruments are well blended there is music, if not, only a noise; in the case of perfumes, if the odors are well combined there is a perfume, and if not, only a smell.

He classified the finished perfumes as perfumes proper, or concentrated solutions of perfume oils in alcohols; colognes and toilet waters of light floral character; and bouquets, which he further subdivided into the French bouquets of the more flowery character, and

the Oriental bouquets of the aromatic or ambrosial character.

Dr. Glassford discussed the perfume materials used for soaps and powders; and also mentioned the use of fixatives to hold the more volatile oils and to prevent their evaporating too fast when the perfume is used, closing the address with a recitation of the alleged history of the first production of the most famous of all perfumes—Otto of Rose.

In a pleasing and gracious manner, Mrs. Clifford Southall contributed to the pleasures of the sense of hearing by rendering several vocal solos.

B. OLIVE COLE, *Secretary-Treasurer.*

CHICAGO.

The 158th meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the School of Pharmacy Building, April 16th, with President Kolb in the chair. A resolution of the committee appointed at the previous meeting was read by President Kolb and after some discussion was unanimously approved by the meeting.

The speaker of the evening, F. A. Upsher Smith, Ph.C., of Minneapolis, Minn., presented an address entitled "Cultivation of Digitalis by One Who Grows It." The paper brought out the development of Digitalis cultivation in this country and the commercial phases, indicating the difficulty of establishing a market for American-grown drugs even of most superior quality in competition with imported drugs; the type of soil and preparation of soil for the growing of the plant; the experimentation with other species of *Digitalis purpurea;* some of the difficulties of cultivation and the anxiety over the vagueness of the weather; the methods of collection, curing and standardization; and a rather extended history of the use of the drug. The many splendid lantern slides brought out distinctions in the various varieties and species of Digitalis, the appearance of the fields of the growing plant and the houses and apparatus used in curing, powdering, sifting and standardizing the drug. Special reference was given to the work being done on *Digitalis lutea* which apparently possesses a slightly higher therapeutic value with a markedly lessened tendency to toxicity than does *Digitalis purpurea.*

In the discussion Wm. Gray and Cornelius Vanderpool inquired regarding the deterioration of the drug, after it had been properly cured and stored. Mr. Smith replied that the powdered drug in capsules kept in tightly sealed bottles showed, over a period of five years, a deterioration of less than one per cent per year. Inquiry was made as to the possibility of supplying the carefully prepared and standardized drug in bulk for prescription use and Mr. Smith replied that there seemed to be no market for such a product as the cost of production and standardization was so much higher than the price of the imported article and all of the Digitalis that he could produce from seven acres of land was being distributed in the form of tincture or capsules in which the dosage was carefully standardized.

Mr. Bohumil Zeman inquired regarding the effect of manure upon the quality of the resulting drug. Mr. Smith answered that manures tended to increase the size of the plant and of the leaf but so far as he could observe had little or no effect upon increasing the strength of the drug.

Mr. Kolb brought out the point that Calcium Lactate was now being combined with Digitalis for dropsical and cardiac affections on the theory that the heart trouble was largely due to calcium deficiency in the blood. Others commented on this medication.

Dean W. B. Day referred to a former meeting of the A. PH. A. in which Dr. Robert A. Hatcher and Prof. C. S. N. Hallberg discussed the "cat method" of Digitalis assay. This was one of Dr. Hatcher's earliest papers on the "cat method." Mr. Smith heartily approved of the cat method of standardization.

I. A. Becker referred to the need of keeping the tincture in small, full bottles. Mr. Smith emphasized this point and indicated that it was the presence of air that led to the deterioration of the tincture and of air and moisture that deteriorated the drug.

Dr. B. L. Monias inquired regarding the preparation of an infusion of Digitalis by the use of cold water. He stated that a maceration of the powdered drug in cold water for one-half hour extracted all of the heart stimulating principle but not the nauseous principle. Mr. Smith indicated that the best way of preparing an infusion of Digitalis was in a thermos bottle and that any desired temperature could be almost exactly maintained during the one hour or one-half hour of maceration by this means.

A very hearty vote of thanks was given to the lecturer.

P. J. KOLB, *President.*

E. N. GATHERCOAL, *Secretary.*

CINCINNATI.

The Cincinnati Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION held its April meeting at Ohio Valley Druggists' Association Headquarters on the 20th. President H. E. Igler presided.

Charles Ehlers, member of the Ohio State Board of Pharmacy, reviewed the U. S. P. X. Points that he specifically emphasized during his talk were general tests, general formulas, abbreviations, standard temperatures, lists of official preparations, biological assays and dosage.

Plans are being made by a joint committee from the Ohio Valley Druggists' Association and the Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION for the entertainment of delegates to the 20th annual convention of the American Druggists' Fire Insurance Company which will meet in Cincinnati, May 24–29. Among the guests and visitors will be Dr. J. H. Beall, Urbana, Ill.; Dr. W. C. Anderson, Brooklyn; Dr. E. F. Kelly, of Baltimore; President L. L. Walton of the AMERICAN PHARMACEUTICAL ASSOCIATION, and President Henry Pollock of the Ohio State Pharmaceutical Association.

BERTHA OTT, *Secretary.*

DETROIT.

The April meeting of the Detroit Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the Wayne County Medical Building, Friday, April 9, 1926.

The meeting was preceded by an excellent dinner which was well attended. Students of the Pharmacy Department of the University of Michigan, and of the College of Pharmacy of the City of Detroit turned out in large numbers, which was gratifying to the members who arranged the program for a Students' Night.

The meeting was called to order by President Rowe. The minutes of the previous meeting were read by the Secretary and approved. Communications from Dr. Jacoby and Treasurer F. F. Ingram, Jr., were read. Mr. Ingram expressed his regret at not being able to attend the meeting to encourage the students in their efforts.

President Rowe announced the serious condition of health of Dr. A. B. Lyons, a member of the Detroit Branch and an outstanding figure in Pharmacy. Mr. Hall suggested that a resolution be drawn up and sent to Dr. Lyons. President Rowe instructed Mr. Hall, as chairman of the Committee, to draw up a suitable resolution and that the same be sent to Dr. Lyons at once.

A Committee on Nominations, to select the officers for the ensuing year, was appointed by the President, as follows: L. A. Seltzer, J. H. Webster and O. Gorenflo. The first speaker of the evening was Mr. Schneider of the College of the City of Detroit, on "The Need of Apprenticeship in Pharmacy." He was followed by Mr. Bower of the University of Michigan, who spoke on "The Advantages of a Longer Course in Pharmacy." Then Mr. Baker of the City College gave a humorous talk on "Why I Chose to Be a Pharmacist—Why Pharmacists Interviewed Chose to Become Pharmacists." Mr. Mitchell of the University of Michigan followed with a very interesting talk on "What One Should Get Out of a College Education." Mr. Poliat of the City College gave his version on "What Service an Apprentice Should Be to a Drug Store." Mr. Byce of the U. of M. followed with a talk on "Education as a Prerequisite to the State Board Examination."

The last speaker was Mr. Mellon of the Detroit College of Pharmacy of the Detroit Institute of Technology. Mr. Mellon had no prepared talk, but was inspired by the other students and gave his impression of pharmacy from the standpoint of student and apprentice. A general discussion followed. Mr. Field expressed his opinion that education should be considered by the State Board as much as practical experience.

Mr. Seltzer then expressed his appreciation to the student body for their interesting talks and for their activities in the Detroit Branch. He assured them "Students' Night" would be a regular feature in the future. Mr. Hall discussed the value of practical experience in the drug store. Professors Stocking and Lakey responded with talks on pharmaceutical education.

President Rowe closed one of the most interesting meetings by thanking the students for their hearty coöperation and splendid program.

BERNARD A. BIALK, *Secretary.*

NEW YORK.

The March meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held on the evening of the eighth with Clyde L. Eddy presiding.

Robert S Lehman, for the committee on education and legislation, presented a comprehensive report on state and national legislation and warned his hearers to be on the lookout for bogus narcotic prescriptions. Referring to the bill in the State Legislature providing for the annual registration of physicians, he considered this a great protection for the public and should have the backing of the drug trade. The various features of the report led to an interesting discussion participated in by Dr. George Diekman, Solomon B. Groisser, Hugo H. Schaefer, Clyde L. Eddy and Turner Currens.

Secretary Gerstner drew attention to the visit of the North Carolina Pharmaceutical Association to New York during the week of June 21st. Treasurer Currens reported that a committee had met representatives of the visiting association and arrangements were being perfected for a banquet at the Hotel Pennsylvania on June 23rd.

Dr. George C. Diekman, for the committee on progress of pharmacy, presented his usual interesting report on new remedies and also abstracts from the leading foreign journals. Among the items were: Examination on Chaulmoogra Oils, Radiographic Examinations, Differentiation of Quinidine from Cinchonidine, Quantitative Estimation of Iodides, Extemporaneous Preparation of Mercurial Ointments.

The speaker of the evening was Dr. Hugo H. Schaefer. His dissertation embodied the results of research work on the chemistry of the various substances found in stick lac and was illustrated by many samples of the lac. He told of the sources of supply, collection periods, chemical constituents, moisture content, sugar and nitrogenous content, the dye stuff, resins and waxes. In dwelling on the commercial uses, the speaker said these were similar to carnauba wax and told of its employment on the soles of shoes. In concluding he spoke of the debt of gratitude he owed his Swiss preceptor, Dr. A. Tschirch.

In the discussion which followed, Dr. Arny pointed out the need of development in research work and stated that we need more men like Dr. Schaefer and Dr. Moritz Dittmar.

In answer to a question by Mr. Gerstner if anything had been done in synthesis of shellac, Dr. Schaefer stated that much work had been done; during the war there was a great scarcity and the synthetic product was cheaper, but unfortunately it did not possess the requisite elasticity and therefore could not replace the original in high grade work.

UNIVERSITY OF NORTH CAROLINA.

Dr. John A. Murphy, associate medical director of the H. K. Mulford Co., of Philadelphia, delivered a most interesting address under the auspices of the University of North Carolina Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION in Chapel Hill on the evening of April 15. The lecture was given in Pharmacy Hall and in addition to the pharmacy students, a large audience of the faculty, students and townspeople greatly enjoyed the instructive address of Dr. Murphy. The speaker chose for his subject, "Recent Developments in the Causes and Treatment of Asthma and Hay Fever."

Dr. Murphy told of the recent developments in the causes and treatment of asthma and hay fever. He pointed out that there are three types of the latter disease—the spring type, the so-called rose-cold; the fall type, which usually appears around the middle of August; and the perennial type, which may occur at any season of the year and which may be caused by sensitivity to emanations from domestic animals.

There are many popular misconceptions as to the causes of hay fever, according to the lecturer. One is that it is due to the rose, while as a matter of fact 90% of the cases ascribed to the rose are due to pollen from such infectious grasses as timothy, Bermuda grass and Johnson grass. Another misconception is that the golden rod causes the disease. The reason for these mistakes is the rose and golden rod are blooming at the time the pollen from the infectious grasses and from rag weed, dock, lambs quarters and plantain are prevalent in the atmosphere.

Between one and two million people in the United States are afflicted with hay fever. Relief may be obtained in the large percentage of the cases, he said, by treating the patient with an extract of the protein that is responsible for his symptoms. The treatment consists of a series of hypodermic injections beginning with a small dose and gradually increasing it as the treatment progresses up to the limit of the patient's tolerance. The plan of treatment is to begin about three months before the expected onset, where it comes at some particular season of the year, giving it once a week and carrying the treatment on through the usual period of symptoms. It is sometimes

necessary to repeat the treatment for three or four years to effect a cure.

The Branch is greatly indebted to Dr. Murphy and to the H. K. Mulford Co. for the very delightful and instructive address.

E. V. KYSER, *Secretary.*

PHILADELPHIA.

The April meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the P. A. R. D. building, Tuesday evening, April 13, 1926, President Cliffe presiding.

The evening was devoted to a discussion of the coming A. PH. A. Convention and a tentative program was formulated for it.

The following motion was passed and ordered sent to Local Secretary, Ambrose Hunsberger:

"That it is the sense of the April meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION that the general plans for Committees, presented by President Cliffe in the absence of Mr. Hunsberger, be approved, that the chairmen of the various committees constitute an Executive Committee, and that Local Secretary Hunsberger is the *de facto* chairman of this Committee."

A second motion was passed as follows:

"That it is also the sense of the April meeting that the Branch President, Mr. Cliffe, and the Local Secretary, Mr. Hunsberger, arrange to see Secretary E. F. Kelly at Baltimore and present the program which the Branch is desirous of having for the Convention."

Most of those present joined in for the usual dinner which was held earlier in the evening at Green's Hotel.

ADLEY B. NICHOLS, *Secretary.*

PHARMACEUTICAL ASPECTS OF PUBLIC HEALTH.

W. Bruce Philip recently addressed the Public Health Commission of the Commonwealth Club of San Francisco. He brought to the attention of his listeners a wonderful opportunity for public health through the medium of the drug store for publicity through its patrons. He stated that in one instance about a year ago 900 drug stores in northern and central California distributed a thousand pieces of Public Health literature in a few days.

He also impressed his hearers with the fact that all reasonable Narcotic, Pure Food and Drug and Public Health laws have been fostered and promoted by pharmaceutical bodies, a long time before they were passed. He argued the appointment of pharmacists on all health promotion committees.

MEMBERS OF THE AMERICAN MEDICAL ASSOCIATION ADDRESS THE DALLAS COUNTY PHARMACEUTICAL ASSOCIATION.

Several members of the American Medical Association in attendance at the annual meeting in Dallas addressed the Dallas County Pharmaceutical Association at a special session on April 23rd.

CORRESPONDENCE

ABSTRACTS FROM LETTERS OF LIFE MEMBERS, A. PH. A.

William Mittelbach.—"I certainly appreciate the Life Membership Certificate. It takes me back to 1891 to the New Orleans meeting. I well remember our trip from St. Louis to New Orleans. Among those in our car were Whelpley, Hemm, Good, Sennewald and others. We stopped at the old St. Charles Hotel. Our meetings were held in the armory if I remember rightly. It was there I saw my old friend and teacher, Prof. Maisch, for the last time. I remember Prof. Lloyd making his demonstration of testing opium for its alkaloidal strength. He had discovered some simple method of analysis. All appreciated his work. In looking over the list of those in attendance, we find that many have crossed the great divide."

J. K. Lilly.—"I acknowledge with a great deal of satisfaction the copy of certificate of Life Membership in the AMERICAN PHARMACEUTICAL ASSOCIATION kindly sent to me recently. Please be assured that the AMERICAN PHARMACEUTICAL ASSOCIATION shall have my keen interest as long as I live."

A HEADQUARTERS LETTER.

A manufacturer writes in reply to a letter from our fellow-member, C. P. Van Schaack of Chicago, that all the members of the staff were enrolled as members of the AMERICAN PHARMACEUTICAL ASSOCIATION in 1920 and have continued their membership ever since. He also states, "We are sure you will be pleased to hear that we are pulling strong for the ASSOCIATION."

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1925–1926.

Office of the Secretary, 10 West Chase St., Baltimore, Md.

LETTER NO. 11.

April 14, 1926.

To the Members of the Council:

73. Motion 34 (See Council Letter No. 10, page 309) has been carried and Dr. Mansfield has been so notified.

74. Motion 35 (See Council Letter No. 10, page 309) has been carried and the National Formulary, Fifth Edition, will become official on July 1, 1926. Notice of this has been given publicity through the kindness of the Pharmaceutical Press.

75. Motion 36 (See Council Letter No. 10, page 310) and Motion 37 (See Council Letter No. 10, page 311) have been carried. Applicants for membership numbered 73 to 116 inclusive and applicants for membership numbered H-148 to H-239 are, therefore, declared elected.

76. The following communication has been received from Dr. W. B. Day:

"For several years past Mr. William Gray of Chicago has offered a prize in the University of Illinois, School of Pharmacy, consisting of membership in the A. PH. A. This has been awarded annually to a member of the graduating class upon the nomination of the faculty of the school. An announcement has been made thereof in the bulletin of the school, from which I enclose a marked clipping. Mr. Gray now wishes to endow this prize so as to insure its permanency. We conferred together and he decided to offer to the ASSOCIATION the sum of one hundred dollars to be held as a trust fund in the same manner as the Remington Honor Medal Fund, the interest to the amount of $5.00 to be awarded annually for the Gray Prize membership in the University of Illinois, School of Pharmacy.

"I dare say the ASSOCIATION can at this time invest the amount so as to bring a sufficient return to pay for this annual membership. It will have the advantage also of bringing into the ASSOCIATION as a new member once a year one of the best of our students.

"I enclose cashier's check for the amount of one hundred dollars and I trust that the ASSOCIATION will accept this fund for the purpose above indicated with the understanding that the award made from this fund is to begin with June 1927, which will allow the fund to remain out at interest for a full year before the interest is used for the purpose."

This letter was submitted to Treasurer Holton who wrote as follows:

"As to the membership from Illinois, could not this amount of $100 be made a part of the Endowment Fund, the interest to be used as per the terms of the bequest. This would save opening another small trust fund. The idea is splendid and might be encouraged in other schools. There is just one thought that I have in connection with it. In accepting it we should state that the interest will be used—as far as it will go—for the purpose intended. It might be entirely possible, in later years, that the dues might be $10 in which case of course the fund would not provide an annual membership."

The thought of the Secretary is that this offer might lead to the establishment of a substantial and growing "Membership Fund" which would insure a certain addition to the membership of the ASSOCIATION each year. Credit could be given for donations and the award made in the name of the donor.

Comments are invited.

77. The following letter has been received from Secretary Adley B. Nichols of the Philadelphia Branch of the A. PH. A.:

"At the March meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, Dr. Robert P. Fischelis presented a most interesting paper on the work being done by the Drug Trade Bureau of Public Information.

"The Branch was greatly impressed with the splendid work being done for pharmacy by this Bureau, and desired that I express their appreciation to the parent body for its

interest in this work and urge that the parent organization continue to give its full support to the bureau."

78. Use of the Text of the N. F. V. The following letter has been received from Chairman DuMez of the Committee on Publications:

"A request has been received for permission to use portions of the text of the N. F. V for partial reproduction in 'Martindale's Extra Pharmacopœia.' A similar request has been received from William Wood and Company for use in 'Stedman's Medical Dictionary,' from Mrs. M. M. Gray for use in 'Gray's Pharmaceutical Quiz Compend," from H. M. Faser for use in 'Laboratory Manual of Pharmacy,' and the *Pharmaceutical Era* for use in 'Key to U. S. P. and N. F.'

"The Committee on Publications has approved these requests and I, therefore, move that these applicants be granted permission to use the text of the N. F. V for partial reproduction, at the customary fee of $5.00 each."

(*Motion 38.*) *It is moved by DuMez that William Martindale, William Wood and Company, H. M. Faser, The Pharmaceutical Era and Mrs. M. M. Gray be granted permission to use the text of the N. F. V for partial reproduction in "Martindale's Extra Pharmacopœia," in "Stedman's Medical Dictionary," in "Faser's Laboratory Manual of Pharmacy," in "Key to U. S. P. and N. F.," and in "Gray's Pharmaceutical Quiz Compend," respectively, and at a charge of $5.00 in each case.*

79. Complimentary Copies of the National Formulary V. Chairman DuMez writes that the Committee on Publications, upon Chairman Scoville's recommendation, has approved sending complimentary copies of the National Formulary V, with the name stamped on the cover, to the following who are either members of the Revision Committee or have rendered valuable assistance in connection with the revision of the National Formulary:

W. L. Scoville, Detroit, Mich.
G. M. Beringer, Camden, N. J.
H. A. B. Dunning, Baltimore, Md.
B. Fantus, Chicago, Ill.
S. L. Hilton, Washington, D. C.
E. L. Newcomb, Minneapolis, Minn.
L. A. Seltzer, Detroit, Mich.
P. H. Utech, Meadville, Pa.
H. V. Arny, New York, N. Y.
E. F. Cook, Philadelphia, Pa.
H. Engelhardt, Baltimore, Md.
O. A. Farwell, Detroit, Mich.
C. H. LaWall, Philadelphia, Pa.
O. Raubenheimer, Brooklyn, N. Y.
C. M. Snow, Chicago, Ill.
R. P. Fischelis, Newark, N. J.
W. A. Hall, Detroit, Mich.
J. R. Blayney, Chicago, Ill.
O. V. Brumley, Columbus, Ohio.
A. G. DuMez, Baltimore, Md.
F. Fenger, Chicago, Ill.
E. N. Gathercoal, Chicago, Ill.
E. F. Kelly, Baltimore, Md.
J. A. Koch, Pittsburgh, Pa.
A. B. Lyons, Detroit, Mich.
A. B. Nichols, Philadelphia, Pa.
H. M. Whelpley, St. Louis, Mo.
L. L. Walton, Williamsport, Pa.
E. G. Eberle, Baltimore, Md.
C. W. Ballard, New York, N. Y.
W. H. Blome, Detroit, Mich.
W. B. Day, Chicago, Ill.
J. W. England, Philadelphia, Pa.
E. B. Fischer, Minneapolis, Minn.
L. D. Havenhill, Lawrence, Kans.
L. A. Klein, Philadelphia, Pa.
E. Kremers, Madison, Wis.
J. H. Milks, Ithaca, N. Y.
J. Rosin, Philadelphia, Pa.
H. W. Youngken, Boston, Mass.

(*Motion 39.*) *It is moved by DuMez that a complimentary copy of the N. F. V be sent to each person whose name appears in the list above.*

80. Complimentary Copies of the N. F. V. It has been suggested that complimentary copies of the N. F. V be sent to a number of publications for review as this will bring the revised edition of the National Formulary to the attention of their readers.

(*Motion 40.*) *It is moved by DuMez that complimentary copies of the N. F. V be sent to a number of publications for review.*

81. Pharmacy Week. The following quotation is taken from a letter from Dr. LaWall to Chairman Hilton of the Council:

"I do not believe that this is the proper time to begin references to Pharmacy Week in the drug journals, but I do think that the two great national associations should immediately appoint committees which should coöperate along some agreed lines for promoting greater interest in Pharmacy Week in the fall of 1926, and especially in bringing the matter to the attention of the

State Associations as an important topic for discussion and coöperative action. I am writing to find out what you think should be the proper procedure.

"I believe that by motion of Council, duly carried, a special committee could be authorized."

The Secretary has also had an inquiry from Australia asking for information about Pharmacy Week and the attention of the members of the Council is called to the action of the House of Delegates of the A. PH. A. as given on page 921 of the October issue of the JOURNAL, and to the action of the N. A. R. D. as given on page 1064 of the November issue of the JOURNAL.

(*Motion 41.*) *It is moved by LaWall that the President be authorized to appoint a special committee of five members to be known as the "Committee on Pharmacy Week" to have charge of the activities of the Association in the promotion of this movement and to coöperate with other interested associations.*

82. Fire Insurance. After careful examination of the supplies, publications, records, and apparatus belonging to the ASSOCIATION now stored at the Baltimore office and after consultation with insurance agents, the Secretary wishes to recommend that a policy for $5000 be placed on this property. The premium on such a policy for a period of three years is $40.50 and the policy can be cancelled or transferred.

(*Motion 42.*) *It is moved by Kelly that a special appropriation of $40.50 be made for fire insurance on the property of the Association at 10 West Chase St., Baltimore, and that the Secretary be authorized to place this insurance with a responsible firm. The appropriation has the approval of the Finance Committee.*

83. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 117, Staten H. Chance, 209 Washington St., Gainesville, Fla.; No. 118, George Eugene Ellison, 248 Chestnut St., Meadville, Pa.; No. 119, Oscar F. Isensee, 337 W. 64th St., Chicago, Ill.; No. 120, Dan Normand MacDonald, 72 West Adams St., Detroit, Mich.; No. 121, Nellie McGinley, 728 Copeland St., E. E., Pittsburgh, Pa.; No. 122, Joseph Edward Penn, 62 Forest Park Ave., Springfield, Mass.; No. 123, Harvey H. Plowfield, 214 W. Douglass St., Reading, Pa.; No. 124, Ernst T. Stuhr, College of Pharmacy, University of Florida, Gainesville, Fla.; No. 125, George Frazner, 44 W. Union Ave., Bound Brook, N. Y.; No. 126, Frank N. R. Bossler, 706 Linden St., Camden, N. J.; No. 127, Arthur Scheffman, 308 Renner Ave., Newark, N. J.

(*Motion 43.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

84. Applicants for Membership on Account of Contributions to the Headquarters Building Fund. The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership and you are requested to vote on the applications which have been properly endorsed.

H-240, Edward E. Abbott, 11 Holbrook St., Palmer, Mass.; H-241, Walter Everett Boyden, Coalville, Utah; H-242, Jeremiah Curtin Cardell, 211 East Preston St., Baltimore, Md.; H-243, James Leighton Cromie, 48 Pond St., Victory Mills, New York; H-244, Frank S. Colley, 610 Tremont St., Boston, Mass.; H-245, Edna I. Maxwell, 2236 South 11th St., St. Joseph, Mo.; H-246, Frank O. McColloch, 559 S. Vermont Ave., Los Angeles, Calif.; H-247, Joseph H. Porter, 3 Roberts St., Caribou, Maine; H-248, H. G. Seyfarth, 3501 Lincoln Ave., Chicago, Ill.; H-249, Kathleen M. Seymour, Research Hospital, Kansas City, Mo.; H-250, Kenneth Reginald Wiles, 298 West Main St., Littleton, N. H.

(*Motion 44.*) *Vote on applications to the Headquarters Building Fund for Membership in the American Pharmaceutical Association.*

E. F. KELLY,
Secretary of the Council.

HEALTH AND MEDICAL CONFERENCE IN MELBOURNE NEXT YEAR.

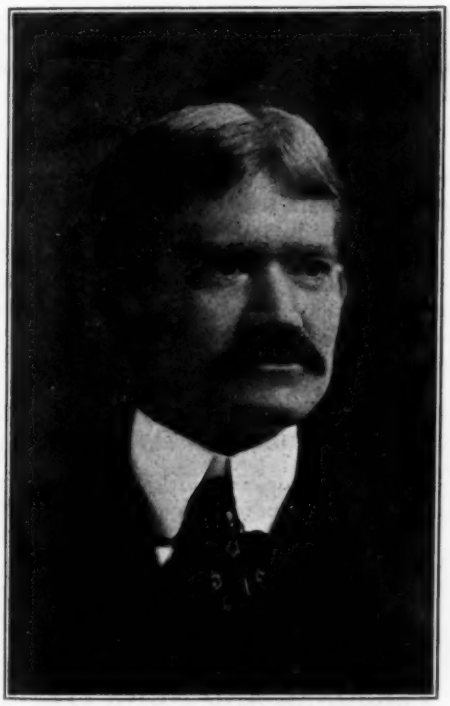
Government participation in a health and medical conference relative to health problems connected with the island groups of the Pacific at Melbourne in 1927 has been recommended to Secretary of State Kellogg in a report from the Secretary of War and Surgeon General of the Army.

EDITORIAL NOTES

Editor: E. G. EBERLE, 10 West Chase St., Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* W. C. ANDERSON, *Vice-Chairman;* E. F. KELLY, *Secretary;* JAMES H. BEAL, CHARLES H. LAWALL, HENRY M. WHELPLEY, H. V. ARNY, A. G. DUMEZ, H. C. CHRISTENSEN, JULIUS A. KOCH, ROBERT P. FISCHELIS. *Ex-Officio:* L. L. WALTON, President; Vice-Presidents, W. C. ANDERSON, CLYDE L. EDDY; E. F. KELLY, Secretary; C. W. HOLTON, Treasurer; WILLIAM D. JONES, Chairman of the House of Delegates. Editors of the JOURNAL and YEAR BOOK: E. G. EBERLE and A. G. DUMEZ. Committee on Publications: A. G. DUMEZ, *Chairman;* R. P. FISCHELIS, H. V. ARNY, H. M. WHELPLEY, E. F. KELLY, C. W. HOLTON, E. G. EBERLE.

Collaborators: The Members of the Council; the Editor of the YEAR BOOK, A. G. DUMEZ; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman, N. F. Revision Committee; the Chairmen of the Sections, A. PH. A.: F. F. BERG, J. G. BEARD, H. C. NEWTON, AMBROSE HUNSBERGER, L. K. DARBAKER; WILLIAM D. JONES, Chairman of the House of Delegates, A. PH. A.; EDWARD H. KRAUS, President, A. A. C. P.; CHARLES B. JORDAN, Chairman Executive Committee, A. A. C. P.; M. N. FORD, President, N. A. B. P.; HENRY C. CHRISTENSEN, Secretary, N. A. B. P.



W. L. Cliffe, as we knew him in 1902, as Local Secretary of the Philadelphia A. PH. A. Convention.

GET READY FOR THE A. PH. A. MEETING IN PHILADELPHIA.

Contributors of papers for the Sections of the AMERICAN PHARMACEUTICAL ASSOCIATION should send in titles of their contributions as soon as possible so as to have them entered on the official program. Names and addresses of the Officers of the Sections will be found on p. X, in this issue of the JOURNAL.

Officers of the Sections should begin intensive work for their respective Sections, as the time for the Convention is rapidly approaching.

HEADQUARTERS PROJECT IS MAKING SATISFACTORY PROGRESS.

E. L. Newcomb, Publicity Director of the A. Ph. A. Headquarters Campaign Committee, was in Baltimore during the first week of April, in conference with Chairman H. A. B. Dunning and other members of the Campaign Committee. The progress of the campaign was discussed and work was laid out for the next month. The members feel very much gratified over the interest exhibited, especially over the fact that many voluntary subscriptions and endorsements have recently come into the office.

Assistant Publicity Director of the Headquarters Campaign Committee, **E. L. Sater,** spent several days in Baltimore the latter part of April. He conferred with Chairman Dunning and Secretary Kelly relative to further publicity work and the visitation among the schools and associations of the South. Mr. Sater expresses himself as highly pleased with the results of his work and great encouragement has been offered from various sections of the South, which will be visited by him.

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Director, Robert P. Fischelis, has issued Bulletins D-17 and D-18, of the Drug Trade Bureau of Public Information.

Bulletin D-17 refers to the movement which is to bring about regulations limiting the sending of unsolicited merchandise through the mails. This matter is being considered and taken up by the National Association of Retail Druggists.

Bulletin D-18 relates to the preliminary preparations that are being made for the 74th annual meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION to be held in Philadelphia during the week of September 13.

Ambrose Hunsberger is the Local Chairman and W. L. Cliffe is the President of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION. The handling of publicity for the meeting has been turned over by the Local Committee to the Drug Trade Bureau of Public Information, and Dr. Robert P. Fischelis, who is a member of the Philadelphia Branch, A. PH. A., will act as Chairman of the Convention Publicity Committee.

The bulletin further states the fact that the convention of the National Association of Retail Druggists will be held in Philadelphia during the week following that of the AMERICAN PHARMACEUTICAL ASSOCIATION. This makes it particularly attractive for many pharmacists to arrange a two weeks' stay and enjoy the exhibits of the Sesqui-Centennial exhibition between the meetings.

The American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy and also the National Conference on Pharmaceutical Research will hold their annual sessions at this time.

QUESTIONNAIRE ON COMMERCIAL SUBJECTS.

Prof. J. G. Beard has sent out a questionnaire, seeking information relative to commercial and merchandising subjects for a paper he will present at the next meeting of the American Association of Colleges of Pharmacy. He desires to include in the paper an expression of the views of the publicists and prominent retail druggists of America, since college authorities will attach great importance to the opinions of such men. The author desires answers to and comments on the questions that follow. Replies are to be sent to Prof. J. G. Beard, University of North Carolina School of Pharmacy.

1. Many people believe that the function of a school is to give instruction *only* in the scientific phases of pharmacy and let the commercial and merchandising parts of the calling be learned elsewhere. Do you agree?

2. Many people argue that retail druggists nowadays give their apprentices practically no instruction in commercial or scientific practice and that colleges, in consequence, must not only educate students to be compounders but should also train them to be merchants as well. Do you agree?

3. It is frequently argued that since retail pharmacy has become so greatly commercialized, and in practice requires so much less scientific knowledge than formerly, it was unnecessary for colleges last year to change from the two- to the three-year course unless the added instruction was to be mainly commercial in nature. Do you agree?

4. The larger schools of pharmacy now require a minimum of three years for a degree. What per cent of such time should be devoted entirely to merchandising and commercial pharmacy?

THE REMINGTON HONOR MEDAL AWARD DINNER MAY 12.

Formal award was made of the Remington Honor Medal to Dr. H. A. B. Dunning at a dinner given on May 12, at Hotel Pennsylvania. Visitors from several sections of the country were present. An account of the event will be printed in the June number of the JOURNAL.

CANADIAN PROPRIETARY ARTICLES TRADE ASSOCIATION.

While there are some articles which will at once go under the new system of the newly formed Proprietary Articles Trade Association, of Canada, the prices of some items cannot be changed at once, so that full operation of the plan will not become effective until later in the year.

PERSONAL AND NEWS ITEMS.

Prof. Anton Hogstad, Jr., delivered a lecture April 9th, before the Biochemical Seminar on the subject "The Chemical Aspects of Immunity," and on April 21st he spoke before the Biochemical Club on "Some Interesting Drugs." The latter talk he subdivided as follows: 1, Drugs of the Scriptures; 2, Drugs of the North American Indian; 3, Some Rare and Interesting Drugs; 4, Arrow Poisons. One hundred boxes of drugs were passed

around, provided with suitable labels giving the general information concerning them.

Prof. Hogstad impressed the Biochemists with the service of the Pharmacist as a professional man in the community, and presented notes on the U. S. P. and N. F. It is Prof. Hogstad's intention to give this talk before other groups at the University of Minnesota.

Dean Edward Spease is the National President of Phi Delta Chi fraternity.

Chairman E. Fullerton Cook, of the U. S. P. Revision Committee, and family, are on their way to Europe. Professor Cook will take up studies at the University of Berne, under Professor Dr. A. Tschirch.

Dean Charles H. LaWall delivered a lecture on "Pure Foods" to St. Davids Society recently and also a lecture on the "Romance of Medicines" before the northern branch of the Philadelphia County Medical Society.

Robert R. Lampa, who retired from Lehn & Fink some months ago, has recovered from a prolonged and serious illness and is rapidly returning to health.

Prof. Otto Raubenheimer has been indisposed for several weeks and under the advice of the physician will take a rest which is necessary for the restoration of his health.

Samuel L. Antonow, former president of the Chicago Retail Druggists' Association, was tendered a banquet on March 23, which was attended by about 400, who came to congratulate the Assistant Director of the State Department of Registration and Education.

T. Bruce Furnival, President of the New York Pharmaceutical Association, and R. E. Putnam have purchased the Brown & Dawson Drug Co. in Syracuse. This is the store in which Mr. Furnival started his drug career.

Robert L. Swain, State Deputy Commissioner of Foods and Drugs, for Maryland, addressed the tenth annual meeting of the Central Atlantic States Association of American Dairy Food and Drug officials held at Harrisburg, April 22–23. The convention was attended by officials from New York, New Jersey, Delaware, Pennsylvania, Maryland, West Virginia, Virginia and the District of Columbia. Federal officials were also in attendance.

Bert Kingsbury, of Fond du Lac, Wis., is the possessor of a mortar and pestle which is stated to be over one hundred and fifty years old. The mortar is of a hard wood and seems to be petrified. The outside is beautifully carved and the pestle is made of iron.

Carl F. G. Meyer, of St. Louis, was one of the speakers of the Convention of the Oklahoma Pharmaceutical Association held in Tulsa last week.

Secretary J. W. Slocum, of Iowa Pharmaceutical Association, has been invited by the Wisconsin Pharmaceutical Association to speak at their annual convention, which is to be held at La Crosse the latter part of June. The subject in which the Wisconsin members are particularly interested is the district meeting idea which originated in Iowa and which has been a pronounced success.

President L. L. Walton, of the AMERICAN PHARMACEUTICAL ASSOCIATION, who for seventeen years has been secretary of the Pennsylvania Board of Pharmacy, has resigned this office and is succeeded by Charles F. Kramer of Harrisburg. Mr. Walton retains his membership on the Board of Pharmacy.

Ex-President **S. L. Hilton,** Chairman of the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION, was in attendance at the hearing of the Capper-Kelly Bill held in Washington last month.

O. J. Cloughly, President of the Federated Wholesale Druggists' Association, attended the hearing of the Capper-Kelly Bill. He carried with him enthusiastic endorsements of the bill from the Missouri Pharmaceutical Association, the St. Louis Retail Druggists Association, the Cinchona Club of St. Louis, representing Missouri as 100% favorable to price standardization.

President **William A. Achenhausen,** of the Missouri Pharmaceutical Association, was also in attendance representing the Kansas City Retail Druggists' Association.

Prof. C. C. Glover, University of Michigan College of Pharmacy, had to undergo an operation for appendicitis. We understand he is making good progress toward recovery.

Dean Edward H. Kraus has returned from Europe after a stay of several months.

Dean Frederick J. Wulling attended the recent meeting of the Board of Trustees of U. S. P., held in Washington last week. He also paid a visit to his son, Emerson, who is on the faculty of the English Department of Syracuse University.

Secretary **Charles L. Parsons** addressed the Maryland Section of the A. C. S., April 30, on "Some Phases of the American Chemical Society."

C. R. Noyes recently addressed the students of the University of Minnesota College of Phar-

macy on "Business Conduct in the Average Drug Store."

Miss B. Olive Cole, of the School of Pharmacy of the University of Maryland, Secretary of Baltimore Branch, A. PH. A., has been elected president of the Baltimore Quota Club.

President S. Y. Harris, of the Maryland Pharmaceutical Association, is carrying out his promise to visit every drug store in Maryland during his term of office.

The Maryland Pharmacist exhibits its interest in National affairs by two timely editorials in the April number. The first relates to the Harrison Act, from which we quote: "Those who would see in the overthrow of the Harrison Act a vindication of certain schools of political thought, should study this matter very seriously so that they may be prepared to handle it at least as successfully as the present law." Relative to H. R. 10125, the comment insists that provision should be made for a pharmacist member and also a member of the National Advisory Health Council in the Bill.

The Virginia Pharmacist for April contains the annual report of the Virginia Board of Pharmacy.

Medical Life, for February, is designated "American Pharmacy Number." The cover quotes Dr. John Morgan's view on the separation of the practice of medicine from that of pharmacy.[1] The interesting number contains as frontispiece a half-tone of Dr. Morgan. Articles of particular interest to pharmacists are: "Early History of Pharmacy in America," by Otto Raubenheimer; "Later History of Pharmacy in America," by J. Leon Lascoff; and "A Chat with Henry V. Arny."

New York Intravenous Laboratory has moved to larger quarters; this represents the fourth time during the past ten years that increased facilities have been found necessary for the Loeser Laboratory.

TWENTIETH ANNIVERSARY OF THE AMERICAN DRUGGISTS' FIRE INSURANCE COMPANY.

The Twentieth Anniversary of the American Druggists' Fire Insurance Company will open at Hotel Gibson in Cincinnati on Monday evening, May 24. The first days of the week will be given over to business sessions; these will be opened by President Avery and addresses will be made by President Pollack of the Ohio State Pharmaceutical Association and by the presidents of the Ohio Valley Druggist Association and Cincinnati Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION. Secretary Freericks will address the Convention on the history and aims of the Company. During the Convention papers will be read by Messrs. Charles H. Avery, L. G. Heinritz, Walter Rothwell, George O. Young, B. M. Keene, F. J. Budelman and W. P. Starkey. The visiting ladies will be entertained by the local ladies. Under the auspices of the Ohio Valley Druggist Association and Cincinnati Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION there will be a visit to and luncheon at Cincinnati Zoo, on Wednesday, followed by a sight-seeing trip of the city and suburbs.

Thursday noon there will be a luncheon at Hotel Gibson at which the AMERICAN PHARMACEUTICAL ASSOCIATION will be represented by President L. L. Walton and Secretary Kelly and the National Association of Retail Druggists by Chairman Riemenschneider of Executive Committee. The luncheon will be presided over by L. G. Heinritz and addresses will also be made by Dr. Wm. C. Anderson and by Dr. J. H. Beal. After the luncheon Dr. J. H. Beal will present the prizes offered in an Agency Contest which was arranged for incident to the Twentieth Anniversary and which has resulted in the production of over ten million dollars of new insurance. On Thursday evening the Company will tender a Garden Dinner to the visitors, stockholders and representatives of the local associations at the home of the Secretary and, after dinner, Secretary and Mrs. Freericks will entertain with an outdoor performance of Winter's Tale given by Schuster-Martin Dramatic School.

OHIO STATE PHARMACEUTICAL ASSOCIATION ADVOCATES A TAKE-A-PICTURE WEEK.

Theodore D. Wetterstroem commended the idea of selecting May 2–8, 1926, as "Take-a-Picture" week. He stated that many of the members of the Ohio Association have complete departments for this work, and that associations should encourage the promotion of this part of the business.

[1] For sketch of Dr. John Morgan, see JOURNAL A. PH. A., for June 1923, p. 477. For sketch of Lyman Spalding see August JOURNAL for 1917, p. 675.

OBITUARY.

ALBERT BROWN LYONS.

A biography of the late past Honorary President, A. Ph. A., Dr. A. B. Lyons, is printed on pp. 1578–1581 of the JOURNAL for 1913; this and recent press items are drawn upon in preparing this brief memorial. The father of our late member worked as a missionary in Hawaii for fifty-four years; that he won the devotion of its people and of the Government was shown when he died—the king sent a Hawaiian flag in which to enshroud him and a monument to his memory was erected by the Sunday Schools of the Island. The sketch referred to, written by Wilbur L. Scoville, gives an interesting account of Dr. Lyons' antecedents, among whom are John Lyon, founder of the School for Boys at Harrow on the Hill; Mary Lyon, founder of Holyoke College; on his mother's side are members of the Brown family, who gave the name to Brown University. The foregoing are only a few of the distinguished ancestors; as stated by his biographer —"Our Honorary President was born, not with a silver spoon in his mouth, but with traditions to uphold."

DR. A. B. LYONS.

The deceased was born at Weimea, Hawaii, April 1, 1841, and lived to celebrate his 85th birthday, and twelve days more. He received his early education at Punahou Preparatory School, Oahu College, and under direction of his parents. Prior to coming to the United States the young man constantly sought information, the sciences being of greatest interest to him. He graduated from Williams College in Massachusetts in 1865 and the next year taught chemistry and physics at Eaglewood Military Academy, Perth Amboy, N. J. Following that he matriculated for the medical course in the University of Michigan and added laboratory work to his studies under the late Prof. A. B. Prescott, President of the A. Ph. A. in 1899.

After graduating in medicine at the University of Michigan he became first, Assistant Professor of Chemistry and, later, Professor at Detroit College of Medicine, which position he held for twelve years. During part of this time he also owned and conducted a prescription pharmacy, wherein, for several years, past Honorary President A. B. Stevens was a partner.

In 1881, Dr. Lyons became analytical and consulting chemist for Parke, Davis & Co. In 1887, he accepted the editorship of the *Pharmaceutical Era*, with Professors Prescott and Vaughan as co-editors and Prof. Stevens and Dr. Ruddiman regular contributors. In 1888 he was appointed Government chemist for the Hawaiian Islands and added professorship of Chemistry in Oahu College to his duties, teaching also physics, botany, zoölogy, physical geography, logic, geology and astronomy. W. L. Scoville said that it is most remarkable for one man to teach such subjects—so many, and yet impress his students so that they hold him in remembrance and in high regard for his part in their education; on his birthday last month such messages were received. It is not overstating to say that he was an authority in most of the subjects he taught.

Since 1897 and until last October, when his health condition interfered, he had charge of the Chemical Department of Nelson Baker & Co., of which corporation he was a director up to the time of his demise.

The indices of the PROCEEDINGS of the AMERICAN PHARMACEUTICAL ASSOCIATION and its JOURNAL record many contributions from his pen; the last paper for the latter is printed in the January number for 1924, p. 7. Many of his papers were also published in other scientific periodicals; as a member of the Revision Committees of the U. S. Pharmacopœia

in 1900 and 1910, he contributed valuable work on the tables of the Standard and its assay processes. The greater number of his contributions to pharmaceutical literature have been largely along the lines of alkaloidal assays and tests. He was the author of a manual on pharmaceutical assaying, revised in 1899 under the title of "Practical Assaying of Drugs and Galenicals," and this was again revised in 1921. In 1900 he published "Plant Names, Scientific and Popular." His most voluminous literary work is "The Genealogy of the American Lyon Families," which was issued about twenty years ago, published in three volumes.

He was a member of the Royal Chemical Society of London for more than forty years, and an honorary member of the British Pharmaceutical Conference since 1911. He was also a member of the American Chemical Society, the American Medical Association, the American Botanical Society, the Association for the Advancement of Science, both in America and Great Britain. He joined the AMERICAN PHARMACEUTICAL ASSOCIATION in 1885, wherein his interest centered in the Scientific Section.

Dr. Lyons was married April 25, 1878, to Miss Edith M. Eddy, who survives him. A daughter, Lucia Edith Lyons, a graduate of the University of Michigan, has served for about six years in China as missionary, but is now living at home. A son, Albert E. Lyons, is Assistant Professor of the Spanish Language and Literature at the University of Wisconsin. Dr. Lyons was a member of the First Congregational Church of Detroit, of which he was a life deacon. Funeral services were held at the home of the deceased. A profusion of flowers, and messages of condolence to the family, evidenced the high regard in which he was held.

A great, good, modest scientist has departed; we extend sympathy to Mrs. Lyons and the children in the loss shared by the ASSOCIATION.

PHILIP LEHR.

Philip Lehr, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, and charter member of the Ohio State Pharmaceutical Association, and for twenty years president of the Retail Druggists' Mutual Fire Insurance Co. of Cincinnati, Ohio, died February 28, at his home in Cleveland, Ohio.

Mr. Lehr was seventy-five years of age at the time of his death and had conducted a drug store in Cleveland since 1873. His wife, four sons and a daughter survive him.

LOUIS HEISTER.

Louis Heister, 74 years old, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, pioneer druggist of Cincinnati, died at Good Samaritan Hospital, January 24, 1926, following an illness of eight months. He was born in Germany and came to this country as a youth. As a young man he started in the drug business in Cincinnati at Liberty and Vine streets. For several years he was in business at Kansas City, Mo.; thereafter, he returned to Cincinnati and entered into partnership with a cousin, William Martin. Upon the latter's retirement Mr. Heister continued the business alone, and later moved to the southwest corner of Seventh and Elm streets, where his business has been located for the past 35 years.

Mr. Heister conducted his establishment along the lines of the old-time apothecary store. He was responsible for the introduction into this country from Italy of the hypodermic forms of medication by means of "hypules."

He is survived by a son, Louis Heister, Jr., of Cleveland, and his daughters, Edith and Helen Heister, who conduct a drug store on East Eighth street, and a brother, Henry Heister, of Chicago.

LUTHER BURBANK.

While Luther Burbank did not directly contribute to the development of medicinal plants, indirectly his work probably had an influence; his great work in speeding up nature, inducing new flavors, odors and colors, prompts a record in these columns.

Vernon Kellogg, National Research Council, writes in the *New York Times* that "Burbank has been called 'the plant wizard;' this name does not connote the possession of any supernatural powers or mystic manners of experimentation. It simply indicates that he possessed unusual power, amounting to genius, of perceiving plant differences and of understanding correlations among these differences; and that he was unusually bold in his experimentation, industrious and persistent in his pursuit of the particular end he had in view. He knew so little of conventional botanical science that he was not handicapped by scientific traditions and dogmatism. If these qualities and the fact that he was brilliantly successful in a kind of work not well understood by the public can be thought to constitute wizardry, then he was a wizard."

F. W. Fincher, of Pentwater, Mich., died March 24, age 71 years. He was a banker, but for many years was engaged in the drug business. He attended the Chicago College of Pharmacy 1875–1876. Mr. Fincher was one of the organizers of the Michigan State Pharmaceutical Association and for a number of years was a member of the State Board of Pharmacy.

Charles Mylert Carr, first editor of the N. A. R. D. Journal, died at his home in Chicago, April 14th, age 63 years. Mr. Carr's early connection with the N. A. R. D. was his work on the N. A. R. D. *Notes* which afterward became the N. A. R. D. *Journal*. For the last few years Mr. Carr was a member of the staff of the *Western Druggist*. During many years Mr. Carr was well known among pharmacists and highly regarded.

SOCIETIES AND COLLEGES.

THEODORE J. BRADLEY, PRESIDENT-ELECT, HONOR GUEST AT DINNER.

Pharmacists of Boston and of Massachusetts tendered a complimentary dinner to Theodore J. Bradley, April 29th. About one hundred and fifty guests were present to do honor to the President-Elect of the AMERICAN PHARMACEUTICAL ASSOCIATION at the new John Alden Park Manor. James F. Finneran presided as toast-master. The following extended congratulations on behalf of the organizations represented by them: John R. Sawyer, President of Boston Association of Retail Druggists; Maurice W. Corbin, President of Massachusetts State Pharmaceutical Association; H. C. Wiggin, President Boston Druggists' Association; John G. Godding, Past-President of AMERICAN PHARMACEUTICAL ASSOCIATION; W. H. Glover, President of Massachusetts College of Pharmacy.

THEODORE J. BRADLEY.

E. G. Eberle delivered an address in which he referred to the qualifications of the President-Elect and the important events which will mark his administration and, at some length, spoke of the record of the AMERICAN PHARMACEUTICAL ASSOCIATION and its future activities. He pointed out the need of greater publicity for pharmacy which would make the public better acquainted with its service. In the course of his remarks he referred to the fact that, including the President-Elect, there were three living who had been honored with the Presidency of the ASSOCIATION out of a total of nine presiding officers from Massachusetts.

The speaker referred to the progress of the Headquarters and its prospective service for pharmacy and, indirectly, for the public.

The response was made by President-Elect Bradley in which he expressed his appreciation of the honor and of the consideration of his many friends; he was hopeful that with their coöperation and the membership at large the work of the ASSOCIATION would be successfully carried forward; he promised his best efforts and thanked those present for their good wishes and evidence of friendship.

On behalf of the guests and friends Irving P. Gammon presented Mrs. Bradley with a basket of beautiful flowers and, in like capacity, James F. Finneran surprised the Dean with a radio set. Vocal selections rendered by Dr. Woodell, and orchestral music added to the pleasure of the evening. The toast-master's happy introductions were well received; the program throughout met general approval and the participants enjoyed the occasion. President Bradley will preside at the 75th annual meeting of the ASSOCIATION.

FIFTEENTH ANNUAL MEETING OF THE AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

The fifteenth annual meeting of the American Drug Manufacturers' Association was held in the Hotel Biltmore, New York City, April 12 to 15. It was largely attended and most successful.

In concluding his report as chairman of the Sub-Committee on Crude and Milled Drugs, S. B. Penick said of the U. S. P. X, that it is nearer to perfection than any previous edition and gives a clearer message to all who are interested in it and who have recourse to it. The Pharmacopœia has cleared up some old time disputed facts by setting forth in greater detail the requirements for the officials, the methods to be used in order to bring about market drugs of greater uniformity.

In speaking of the government project for drug research at the Bureau of Chemistry, L. E. Warren said that it is hoped to secure as collaborative aids those pharmaceutical chemists most interested and best suited to deal with the specific subjects under consideration. Pharmaceutical manufacturers, schools of pharmacy, city and municipal laboratories, and the station laboratories of the Bureau of Chemistry will be asked to collaborate in the analytical work and to cooperate by exchanging information. At present, he said, there are seven pharmaceutical manufacturers, four schools of pharmacy, and two laboratories of the Bureau of Chemistry giving the desired aid. Provision will be made for prompt distribution of information and data to those who are particularly interested.

The Contact Committee report was presented by Dr. J. P. Snyder. A report of the Committee is printed in the JOURNAL for April, pp. 302–306.

President S. R. Light's address was comprehensive; it outlined the activities of the Association in general and commented on government relations.

The report of Secretary Carson P. Frailey dealt largely with legislative matters. He said that the output of state legislative mills during 1925 is estimated to have been 11,000 new laws representing all forms, public and private, from a grand total of about 39,000 bills introduced. Commenting thereon he said that the growing publicity of control by statute has seemingly developed law making into one of our great national pastimes. He remarked that in almost every instance wherein the hand of government is authorized through legislative enactment to enter or intervene in the domain of industry a certain degree of freedom is lost both to the individual and to the property affected.

In a paper by Dr. Frank B. Kirby on "Business Literature of To-day," the author said, "We can never know too much of our own line; and, therefore, should subscribe for, read and contribute to several journals closely in touch with that part of the trade with which we are most intimately connected. I mention the word 'contribute' as possibly a new thought to some, realizing it is impossible to every man, but some may influence for good a wide clientele and partly cancel their obligations to a hard-working publisher and a score of business men who may be partly responsible for their success."

Francis P. Garvin, President of the Chemical Foundation, devoted the greater part of his address to the loss of time and inconvenience incurred by the prevalence of common colds.

The greetings of the AMERICAN PHARMACEUTICAL ASSOCIATION were presented by Clyde L. Eddy. The officers elected for the ensuing year are as follows: *President*, S. R. Light, Kalamazoo; *First Vice-President*, Oscar W. Smith, Detroit; *Second Vice-President*, Charles G. Merrill, Cincinnati; *Third Vice-President*, Ralph R. Patch, Stoneham, Mass.; *Secretary*, Carson P. Frailey, Washington, D. C.; *Treasurer*, Franklin Black, New York, and additional members of the *Executive Committee*, S. B. Penick, New York, J. F. Anderson, New Brunswick, N. J., and N. H. Noyes, Indianapolis, A. Homer Smith, Baltimore.

ASSOCIATION NOTES.

The time of the forty-fourth annual convention of Alabama Pharmaceutical Association has been fixed for June 22–24, and is to be held at Mobile. The Alabama State Board of Pharmacy will meet at the same time for the examination of candidates.

The Southern Druggists' Club, composed of wholesale druggists of southern states, held their semi-annual meeting at Birmingham. J. L. Bomar of Little Rock is the president and John W. Derr of Montgomery, Ala., is the Secretary-Treasurer.

The American Registered Pharmacists' Association will convene in Sacramento, Cal., July 4 to 6.

The Ontario Retail Druggists' Association

will meet in annual convention in Toronto, May 31 to June 3. The Committee on Publicity is composed of W. M. Maltby Lymanhowe, Charles G. Whebby, R. A. Greer, F. A. Jacobs, W. C. A. Moffat, and R. H. Bedell.

RHO CHI HONORARY PHARMACEUTICAL SOCIETY.

Delta Chapter of Rho Chi, at the College of Pharmacy of the State University of Iowa, held its annual initiation on Monday evening, April 19.

The following evening the new members were honored by a banquet at the Memorial Union. Lloyd L. Boughton acted as toast master. Neoma Kistenmacher welcomed the new members and Edward J. Hipschen responded. Dean W. J. Teeters spoke for the honorary members. The principal address "Pharmacy Fifty Years Ago" was given by Dr. E. L. Boerner, Professor Emeritus and first Dean of the College, also an honorary member of Delta Chapter.

Election to Rho Chi is a real honor for it is based solely on scholarship. Candidates must be nominated by the Dean, the nomination being made after a careful checking of points earned.

Raymond L. Rink, of Geneseo, Ill., headed the list of new members with a point average of 3.8, out of a possible 4. Mr. Rink was awarded the Kuever prize for the highest rank in practical pharmacy during the junior year. Helena Bunge, of Avoca, the only woman elected, had the second highest point average. Miss Bunge, a member of Kappa Epsilon pharmaceutical sorority, was awarded the Rho Chi prize last year for attaining the highest average in all subjects. Others chosen are William A. Hodoval, a member of Beta Phi Sigma fraternity, whose home is at Oxford Junction; Edward J. Hipschen, Beta Psi fraternity, Bellevue; Louis C. Zopf, clarinetist in the University Band, Marengo; Walter Beatty, Beta Phi Sigma, Mascoutah, Ill.; Edward F. Bohling, Beta Phi Sigma, Chelsea; Charles Holub, Beta Phi Sigma, Cedar Rapids.

ALPHA ZETA OMEGA FRATERNITY.

Alpha Zeta Omega fraternity will hold its annual convention in Philadelphia, the week of June 21, to hold conventions during the Sesqui-Centennial. The largest convention in the history of the fraternity is expected. Elaborate plans for social entertainment and business discussions are being made. The national officers of the fraternity are: S. I. Sless, Philadelphia, supreme directorum; S. Block, Baltimore, supreme sub directorum; B. Margolis, Philadelphia, supreme excheque, and I. M. Ostrum, Philadelphia, supreme signare.

ARIZONA PHARMACY AND POISON LAW.

The Pharmacy Law of Arizona provides that the following may be sold without restriction:

Glauber salts, vaseline, turpentine, condition powders, cream of tartar, carbonate of soda, bay rum, essence of peppermint, ammonia, alum, castor oil, bicarbonate of soda, chloride of lime, glycerine, witch-hazel, sheep dip, borax, sulphur, blue stone, flaxseed, insect powder, fly paper, when prepared and labeled with the official poison labels.

A dealer may be granted a permit to sell the items enumerated in the appended list, if three miles distant from the store of a registered pharmacist:

Tincture of arnica, spirit of camphor, almond oil, distilled extract witch-hazel, syrup of ipecac, syrup of rhubarb, hive syrup, sweet spirit of nitre, tincture of iron, epsom salts, rochelle salts, senna leaves, carbonate of magnesia, seidlitz powders, quinine, cathartic pills, chamomile flowers, caraway seed, chlorate of potash, moth balls, plasters, salves, ointments, peroxide of hydrogen, copperas, camphor, asafœtida, saffron, anise seed, saltpeter.

Secretary Arthur G. Hulett, *Second Vice-President* of the AMERICAN PHARMACEUTICAL ASSOCIATION, has been visiting the different districts of Arizona, inspecting stores and enlisting the druggists in State and National Association work. President E. C. Stults has been in attendance at some of these meetings.

BRONX COUNTY PHARMACEUTICAL ASSOCIATION.

The Bronx County Pharmaceutical Association, New York, has elected the following officers:

President, Samuel S. Dworkin; *First Vice-President*, Morris Brodkin; *Second Vice-President*, Benjamin Kahn; *Corresponding Secretary*, Leo Tartak; *Recording Secretary*, Irving L. Seloff; *Financial Secretary*, Max Haims; *Treasurer*, Adolph Shnitter. President S. S. Dworkin was presented with a Stromberg-Carlson Radio and Cabinet by the Association.

THE AMERICAN PHARMACEUTICAL MANUFACTURERS' ASSOCIATION TO MEET IN ADIRONDACKS.

The next annual meeting of the American Pharmaceutical Manufacturers' Association will be held June 15–20 at Lake Placid Club, Essex county, New York, in the heart of the Adirondack Lake region.

NEW OFFICERS, MINNESOTA PHARMACEUTICAL ASSOCIATION.

Secretary Gustav Bachman has announced the result of the mail ballot for officers of the Minnesota State Pharmaceutical Association for 1927, as follows:

President, A. L. Malmo, Duluth; *First Vice-President*, G. A. Thompson, St. Paul; *Second Vice-President*, Joseph Vadheim, Tyler, Minn.; *Third Vice-President*, Miss Hazel Landeen, Duluth; *Secretary*, Gustav Bachman, Minneapolis; *Treasurer*, H. Martin Joynson, St. Paul, Minn.; *Member of the Executive Committee*, John B. Christgau, of Owatonna, Minn.

ORGANIZATION OF THE CANADIAN PROPRIETARY ARTICLES TRADE ASSOCIATION.

At the meeting of the Executive Committee P. A. T. A. (Great Britain), January 14, it was reported that the principal manufacturers in Canada made it a condition of joining the organization that Sir William S. Glyn-Jones should take charge of it, at least in its initial stages, and it was urged by both wholesale and retail sections that this was essential if the movement was to be a success. Sir William has informed the Committee that, after careful consideration of the position, including its bearing on the P. A. T. A. in Great Britain, his obligation to British manufacturers marketing their products in Canada, and the United States, and upon the future of pharmacy throughout the British Empire, he has decided to accede to the insistent appeals of the Canadian trade that he should accept the office of Chairman of the Council of the Canadian organization. He has pointed out that this would necessitate two journeys a year to Canada, involving an absence from this country of about three months on each occasion.

Although his present office of Secretary of the P. A. T. A. is not a whole-time appointment, in order that the Council may be free to deal with the position solely from the point of view of the interests of the P. A. T. A., Sir William has tendered to the President his resignation of his office as Secretary, in the hope that, either by continuing in his present appointment, or in some other way, he may still be enabled to direct the affairs of the British P. A. T. A.

The Executive Committee, after full consideration, decided unanimously to recommend to the Council that the resignation of the Secretary be not accepted, but that six months' leave of absence be granted to him during the year 1926, and that the matter be reconsidered at the expiration of that period. Sir William is now in Canada, as stated elsewhere.

RESIGNATION OF SIR WILLIAM S. GLYN-JONES.

Since the foregoing was written it has been reported that "In view of the urgency of a demand upon the services of the Secretary in connection with the development of pharmaceutical organization in Canada, involving in the immediate future his spending almost the whole of his time in that country, Sir William asked to be released immediately from his office of secretary and registrar. The circumstances which had rendered this step necessary were fully explained by Sir William, and on the motion of the President it was unanimously resolved to accede to the Secretary's request, and to defer consideration of the appointment of a successor and of any arrangement whereby for the time being Sir William's services might be available to the Society in a consultative capacity until the next meeting."

SERVICE OF THE LIBRARY OF COLLEGE OF PHYSICIANS IN PHILADELPHIA.

The service of the Library of the College of Physicians in Philadelphia is shown by the annual report.

The Library has a total of 146,998 bound volumes; about 25,000 unbound reports and transactions; about 24,000 unbound theses and dissertations; and more than 148,000 unbound pamphlets. During the year 4606 volumes were taken out of the Library; 7250 persons used the Library, and 23,512 volumes were consulted on demand.

TOLEDO'S MUSEUM.

When Edward Drummond Libbey, of Toledo, died, he bequeathed $6,350,000 to the Art Museum of the city, along with $850,000 for the completion of its main building, and made the museum his residuary legatee. The appraisal of his estate has just

been completed, and it now appears that the residue which will go to the museum amounts to $13,000,000. Thus in addition to the gifts which Mr. Libbey made during his lifetime, the museum comes in for $20,000,000.

Similar gifts, perhaps not so large, are given to memorialize the donor and contribute to the comfort, well-being or enjoyment of many. All of these acts are commendable, and stimulate the wish and strengthen the hope that at some time pharmacy will be remembered by some one who has derived part of his or her fortune from the drug trade, or desires to aid pharmacy in a greater service.

AMERICAN IDEALISM IN PUBLIC HEALTH.

A Brazilian author, recently, has traced the development of modern preventive medicine, dividing it into three periods: the work of Chadwick and the English school; Pasteur and Koch's contributions; American idealism. While the first two steps were epoch making, the actual prevention and control of epidemic diseases depended on the organization of an efficient public health service. This is the task which, according to Clark, the United States has successfully performed for the last twenty years. It demanded a combination of such rare qualities as idealism, philanthropy, generosity, daring, perseverance, and devotion to duty. These the Brazilian scientist could find nowhere else in his historical survey, thus justifying America's leading rôle in modern social medicine. Americans were the first to understand the need of reforming medical education in order to cope with the many-sided problems of social medicine. Their altruism led them to establish public health schools, not only in their own country, but abroad—Brazil, China, England.—Abstract from an Editorial in *Journal A. M. A.*

THE PHARMACIST AND THE LAW.

THE U. S. CIRCUIT COURT OF APPEALS, NEW YORK, REVERSES ORDER OF FEDERAL TRADE COMMISSION.

The U. S. Circuit Court of Appeals in New York has reversed the order of the Federal Trade Commission for the American Tobacco Company to "cease and desist" from its refusal to sell its products to certain wholesalers or resell it to retailers at prices showing less than a legitimate profit. The Commission had held that the Tobacco Company's practice was in restraint of trade. The opinion of the Court was written by Judge Henry W. Rogers and concurred in by Judges Martin T. Manton and Learned Hand. It holds that the company not only is innocent of unfair practices but "actually tended to promote fairness of trade and the suppression of unfairness in competition." The decision said in part:

"Practices cannot be regarded as fair which work the demoralization of the business, and practices cannot be regarded as unfair methods of competition if the manufacturer declines to sell to the wholesaler who demoralizes the legitimate market by selling at a price which those in the business regard as insufficient to enable the business to be conducted at a reasonable profit."

"In holding that the Federal Trade Commission was intended to prevent what the American Tobacco Company did, we are clearly of the opinion that the Commission misapprehended that intent of the Act. (Act to create a Federal Trade Commission passed Sept. 26, 1914.)"

HEARINGS ON RESALE PRICE MAINTENANCE.

Hearing on resale price maintenance legislation was begun April 22 before the House Committee on Interstate and Foreign Commerce. The Kelly bill, H. R. 11, was taken up with an audience including scores of representatives of manufacturing, distributing and retail trade associations or individual concerns supporting the bill, as well as many of its opponents. The hearing was planned to conclude April 24.

The case for the proponents was in charge of an informal board of strategy, including Representative Kelly of Pennsylvania, author of the bill; Edmond Whittier, secretary of the American Fair Trade League; W. H. Creighton Clarke, its attorney; and others, with whom W. L. Crounse, Washington representative of drug and toilet preparation trade interests, consulted. The point of view of the retail drug trade was voiced by James F. Finneran of Boston. The drug trade was represented by delegations from the State pharmaceutical associations of the District of Columbia, Maryland, Ohio, New York, Virginia, Alabama,

Pennsylvania, Michigan, Missouri and New Jersey.

CHEMISTS AND CHEMISTS.

Criticus under "Unofficial Observations" in the *Journal and Pharmacist* discusses the article by Prof. J. F. Thorpe relative to the use of the term "chemist," printed in the *London Daily Express* of April 9th.

"Prof. Thorpe warns his readers against the error of associating the practice of applied chemistry with pharmacy. The following is reprinted:

"It has become the custom to use the word chemist to denote the chemist and druggist who is, in reality, the pharmacist, and ought to be so styled. In the present article the name chemist will be given its proper meaning. Now, however much the scientific and technical chemist may chafe under the necessity of having to use, by courtesy of the Pharmaceutical Society, a title which he demands should be exclusively his own, he ought not to misstate the historic facts of the case, which are that in virtue of 'user' in this country since the 17th century, and of the statutory right conferred by the Pharmacy Acts, the title chemist is reserved to persons who, under statutorily prescribed conditions, have qualified to hold it, or to bodies corporated lawfully carrying on business as chemists and druggists. 'Pharmaceutical chemist' might be a more appropriate title for the qualified practitioner of pharmacy, but since pharmacists as a body are not responsible for the titular difficulty of which the scientific and technical chemists complain, it is for the latter to find 'a better 'ole' without jumping the claim which the pharmacist long ago staked out, and is still working."

PERMITTED COAL-TAR FOOD DYES MUST MEET GOVERNMENT STANDARDS.

Standards of coal-tar food dyes are discussed in Department Bulletin No. 1390, Chemistry and Analysis of the Permitted Coal-Tar Food Dyes, just issued by the department. The bulletin also deals with the technical specifications, for each permitted coal-tar dye, the substance from which it is made, the usual method of manufacture, and gives the details of the methods of analysis used by the Bureau of Chemistry.

CIVIL SERVICE EXAMINATIONS PROVIDED FOR IN CRAMTON BILL.

A system of civil service examinations, appointments and production for the entire personnel of the prohibition unit is provided for in the Cramton Bill as reported from the Senate Committee on Civil Service. The Volstead Act made certain exceptions from the Civil Service regulations in the matter of appointments to the Prohibition Service. The Cramton Bill as reported to the Senate strikes out all exceptions.

F. C. BAIRD SUCCEEDS WILLIAM G. MURDOCH AS PROHIBITION ADMINISTRATOR.

William G. Murdoch has resigned as Prohibition Administrator for New Jersey and Eastern Pennsylvania. F. C. Baird, former Administrator in Western Pennsylvania, with headquarters at Pittsburgh, succeeds him.

SUGGESTED AMENDMENT OF THE HARRISON LAW.

Several amendments to the Harrison narcotic law, in part to conform to recent court decisions, have been suggested by the Narcotic Division, Treasury Department, and are embodied in a draft of legislation that has been under consideration by Assistant Secretary L. C. Andrews, and Secretary Mellon of the Treasury Department, and expected soon to be submitted to Congress. In connection with the drafting of these amendments it is learned that the endeavor has been to overcome the adverse effect of decisions, chiefly of lower courts.

CANADIAN PROPRIETARY ARTICLES TRADE ASSOCIATION.

The following are the rules and constitution of the Proprietary Articles Trade Association of Canada adopted by a meeting held at Montreal on March 15, and these are reprinted from *The Chemist and Druggist* of April 10. The subject has received some thought in this country, and as the rules and constitution present a general outline of the plan these are printed herewith.

CONSTITUTION AND RULES.

1. The Association shall be called the Proprietary Articles Trade Association.

2. The objects of the Association shall be:

(*a*) The discussion of matters of common interest to the branches of the trades represented, with a view to decision, and, if necessary, coöperation.

(*b*) The taking of such steps as the Association may be advised are legal and not detrimental to the interests of the public

whether consumers, producers or others, to deal with unreasonable and unfair cutting of prices, and to give advice and render assistance to its members in preventing substitution.

(*c*) The doing of such other things as are lawful and as may appear to be of benefit to the trade and not detrimental to the public interests.

3. The Association shall consist of Manufacturers and Wholesale and Retail Vendors of Proprietary Articles who give evidence of their being in sympathy with the objects of the Association.

4. The affairs of the Association shall be under the entire management and control of a Council consisting of the following:

(*a*) All members of the Manufacturers' Section.

(*b*) All members of the Wholesale Section.

(*c*) One retail representative from each of the following provinces, namely: British Columbia, Alberta, Saskatchewan, Manitoba, New Brunswick, Nova Scotia and Prince Edward Island; two representatives from Quebec and three from Ontario. These may elect additional members to their section up to the number of three.

5. That the election of members of each section of the Council shall take place annually.

6. No resolution of the Council shall be deemed to be carried and no rule or regulation of the Association become operative unless it has first received the approval of the majority of each section.

7. The three sections of the Council shall constitute three Committees to whom matters particularly affecting their branches of the trade shall be referred, but any decision arrived at by such Committees to be subject to the ratification of the Council.

8. The meetings of the Council shall be held at such times and places as the Council may direct, but at least one meeting of the Council shall be held in each year.

9. In order to facilitate the handling of the business of the Association, the Council may delegate its authority to an Executive Committee consisting of the President, Chairman of the Council, Treasurer, three Vice-Presidents, one to be nominated by each section of the Association, namely, Manufacturers, Wholesalers and Retailers, and of three members of each section of the Council, such members to be elected by their respective sections.

10. The Council is authorized to make rules and regulations for its own government and the government of the Executive Committee and likewise that of the Association and to annul or alter the same from time to time as occasion may require.

11. The Council shall be empowered to elect the officers of the Association, and to decide what shall constitute the various duties, privileges and emoluments in connection with such offices. The officers shall retire from office each year, and shall be eligible for reëlection.

12. The following shall be the annual subscriptions to the Association: owners of proprietary articles $100 for the first article listed, and $3.00 for each additional article.

Wholesale vendors $200 per year for each store operated by them.

Retail vendors $5.00 per year for each store operated by them.

Each member to be entitled to one vote for each subscription paid, but no member shall be entitled to vote or hold office unless the subscription is paid.

The subscriptions run for 12 months from date of payment.

RESOLUTIONS.

The following are resolutions passed at the same meeting:

2. That the Proprietary Articles Trade Association be informed that this Organization Meeting expresses to them their sincere appreciation of the courtesy shown by them in relinquishing the above title so that it may be taken by this organization.

Minimum Prices.

3. To recommend to manufacturers that where articles have been so severely cut, that a sudden advance from the cut price to the advertised price would be inexpedient, the minimum retail price should be something lower than the advertised price.

Mail Order Catalog Prices.

4. That the listing of P. A. T. A. articles appearing in the current lists of well-known Mail Order Houses be postponed to a date (August) to coincide with the issues of the catalog of such Mail Order Houses in which the prices shall be adjusted to correspond with P. A. T. A. prices.

Substitution.

5. That as the object of the Association is to secure for manufacturers unfettered dis-

tribution to the public through trade channels, the Council pledges itself to discourage unfair practices on the part of any trader in connection with such articles as are on the Association's list and to take such similar steps as they are advised are legal to prevent supplies reaching any trader who attempts, when a P. A. T. A. article is asked for, to induce the customer to take a substitute, as they do in the case of the trader who sells below the P. A. T. A. prices.

Imported Proprietaries.

6. Where a manufacturer abroad has established a branch or appointed an agent in Canada for the purpose of handling an article specially put up for the Canadian market, which article has been placed on the Association's Protected List, the Association shall take such steps as their lawyer may advise are legal in giving to the manufacturer and his agent assistances in preventing that manufacturer's article from being sold unless in the package specially adopted for the Canadian market.

Coöperation in the Event of Legal Proceedings.

7. In the event of any question arising as to the legality of the Association or its operations and of legal proceedings being taken against any member of the Association on account of his membership of the Association, or of any act essential to the carrying out of any rule or resolution of the Association which he may have committed (the rules or resolutions being such as the Association's lawyer has advised are legal) the Association shall take charge of the case and assume costs up to the limit of the Association's funds. Furthermore, in the event of the Association not possessing sufficient funds for the purpose of defending any such case as is referred to in the foregoing resolution, the Council shall make a levy upon every member of the Association.

Coöperation with Grocery Trade.

On a report by Mr. Crowder that at a conference of manufacturers, wholesalers and retailers in the Grocery Trade, covering the Dominion, held in Toronto on March 9, a resolution was passed that they were ready to support the P. A. T. A. movement, and asking that this organization might reciprocate their sentiments as far as their organization was concerned, it was

8. Resolved that the Grocers' Conference be thanked for their resolution and informed that this organization would be glad at all times to coöperate with them in appropriate and legal methods of dealing with the mischief of extreme cutting.

The list of manufacturers who have joined the movement contains the names of 111 firms.

BOOK NOTICES AND REVIEWS.

The Chemistry of Drugs. By Norman Evers. viii + 247 pages. D. Van Nostrand Co., New York, 1926. Price, $9.00.

The author states in his preface: that he has endeavored to give a description of substances used in medicine from the standpoint of pure chemistry; that the scope of the work includes the chemistry of manufacturing methods rather than technical details; that all methods of analysis are excluded; that natural drugs containing no definite chemical substances or whose active principles are unknown are omitted; finally he acknowledges his indebtedness to the well-known works of Henry on Plant Alkaloids, Barrowcliff and Carr, Percy May, and E. Fourneau (Sylvester's Translation) on synthetic drugs. The author has departed from this declaration of principles in many instances and would have done well to include in his books of reference New and Non-official Remedies of the American Medical Association. Had he done this latter many of the errors which he has committed would not have appeared in the book.

Part 1 is devoted to synthetic drugs. It contains structural formulas for a large number of synthetic remedies, a feature which has considerable value. The chemistry of the manufacture of these is fairly satisfactory but in many cases all information given could be readily found in any good text on theoretical organic chemistry. Much discussion of therapeutic action and details of manufacture is indulged in. The writer cannot agree with some of the author's therapeutics, for example: silver protein compounds are not used exclusively for gonorrhoea; sajodin is not an antiseptic but a substitute for iodides and has the action of iodides; we believe that antiseptics prevent the growth of bacteria but do not kill

them; we doubt the statement that chloroform is the best known anesthetic. In most cases the manufacturing methods, because of their brevity, are of little value to the manufacturer and have no value to a teacher because they are not adapted to student laboratory work. To state that if a substance A be treated with B and C it is converted to D which on condensation with E gives F and the latter on heating is converted to G which on treatment with H gives I and on condensation with J gives K is not very enlightening to any one and could be omitted without being missed. Such statements appear frequently, another notable example being that "Thymol iodide is prepared by the action of iodine on thymol!!"

The absence of American as well as other synonyms for some synthetics is noticeable. Cincophen, barbital, orphol, carbromal, calioben, croton chloral and others do not appear at all. Procaine, formin, holocaine, sajodin (spelled sojoidin and also sajoidin) are found only in the index or in the tables. Butesin is not described but butesin picrate is. Phenacaine is not mentioned.

The chapter on general anesthetics might be omitted since all the information given could be obtained from any good text. The most interesting new thing on this subject, the use of ethylene as a general anesthetic, is not mentioned. Only a few words are to be found on the chemistry of the large number of antimony compounds now in use. Considering the vast number of mercury compounds used in medicine the discussion of these, covering less than two pages, seems worthless. Any real information on these two topics must be sought for elsewhere. The same remarks apply to a somewhat less degree to the section on arsenicals.

Part 2, section 1, on drugs containing alkaloids presents very little if any new material. From the standpoint of the manufacturer or the teacher it would be far better for either to consult Henry, Pictet or other reference works then to depend on such an abridgment as this. Heroin and diacetylmorphine are not synonymous, heroin being the hydrochloride. The same remark applies to dionin which is not ethylmorphine but the chloride of it. The author fails to make this distinction in other places.

Part 2, section 2, deals with drugs not containing alkaloids. We have very little definite knowledge of the chemistry of such well-known drugs as digitalis and strophanthus and what knowledge we have is in a very unsettled state. This may account for the author's formula $C_{44}H_{70}O_{13}$ for digitoxin, which does not agree with the one most frequently given and does not agree with the formula in the table on p. 152. The formulas for digitonin on p. 154 and in the table do not agree. The formula given for digitalin $C_{37}H_{58}O_{14}$ is not the commonly given one. French and German digitalin are not mentioned. Numerous other drugs are mentioned in alphabetical order about which practically nothing of a chemical character is known and many of them are of so little importance that they could well be omitted and more space devoted to such important topics as the arsenicals, antimony, and mercury compounds. Numerous animal drugs are discussed with very little reference to their chemistry, about which little is known, but in some cases extensive details of manufacturing methods are discussed which are valuable. This is particularly true in connection with insulin as much space is devoted to the commercial methods of isolation.

An appendix contains some lists of drugs with official, trade and chemical names and physiological action. These tables will undoubtedly prove of value for reference.

In addition to those mentioned above errors have been noticed as follows. The formula for salophen, page 22, is incorrect. Caffein, "hei ne," page 111, should no doubt read caffeine, thein. The formula for gaultherin, page 161, is incorrect. The formula for butyn, page 30, is incorrect and furthermore butyn is the sulphate of the base mentioned and not the base itself. The reference on p. 13 should read Rising and Stieglitz and not "Rising and Streglitz."

The book might prove of value to one who does not have access to the books mentioned in the introduction or to one who wishes to know only the structural formulas, a few of the properties, physiological action, synonyms, or who wishes only to gain some general information about certain drugs.

A. H. CLARK.

Vitamins, a Critical Survey of the Theory of Accessory Food Factors. By Ragnar Berg. Translated from the German by Eden and Cedar Paul. Octavo. 415 pp. Alfred A. Knopf, 730 Fifth Ave., New York City.

From the days of the great Liebig down to the year 1910, only four classes of nutritive substances were recognized: proteins, fats,

carbohydrates and salts. It is true that Liebig already drew attention to the fact that development cannot run its normal course either in plants, or in animals, should the supply even of one of the necessary constituents of a complete diet be inadequate. Max Rubner, director of the Hygienic Institute at Berlin, took a great step forward when he proved that it is not enough to furnish a sufficiency of protein, and that our aim must be to provide the body with the requisite modicum of energy. However, in 1910 the epoch-making discovery was made that, besides the four primary food-stuffs, in addition to a sufficiency of calories, the diet must contain quantities of certain substances which are vitally necessary to growth, strength and health. Dr. Ragnar Berg, director of the Laboratory of Physiological Chemistry at Weisser Hirsch, near Dresden, a renowned health resort, in the book before us considers the whole subject of dietetics in the light of our growing knowledge of these "Accessory Food Factors." These have been named "Vitamine" in 1913 by Dr. Casimir Funk, one of the pioneers in these investigations.

As all this knowledge is scattered in thousands of fugitive essays in the periodical press, in many lands and many languages, Berg's masterwork now before us is the first comprehensive treatment of the whole subject in book form. It is indispensable, not only to physiological chemists and specialists in dietetics, but to all medical practitioners, to students of hygiene, and last, but not least, to scientific pharmacists!

Anleitung zum Glasblasen. Von Dr. H. Ebert. 5 Auflage von Dr. phil. et techn. F. Hauser. 110 pp. MK. 5—Verlag von Jok. Ambr. Barth, Solomon str. 18. b. Leipzig.

This popular Handbook of Glass-blowing was first published in 1887 by Dr. Hermann Ebert, then Professor of Physics at the Technical High School in Munich. Upon his death in 1913, the present fifth edition was revised by Dr. F. Hauser, Professor of Physics, University Erlangen.

Glass-blowing is neither very easy nor very difficult. Some operations are so easy that the youngest laboratory boy should be able to carry them out. Other operations are so difficult that years are needed to train eye, hand and judgment in order to accomplish them successfully. However, the greater number of scientific needs lie between these two extremes. Yet a surprisingly large number of laboratory workers fail even to join a glass tube or make a T piece that will not crack spontaneously. The fault is rather one of understanding than of lack of ability.

The book before us with its 110 pages and 73 illustrations will be a great help to those interested in this subject and we can highly recommend it.

Kurzes Lehrbuch der Analytischen Chemie. In Zwei Bänden. Von F. P. Treadwell, Prof. analyt.-Chemie an der Eidgenössischen, Technischen Hochschule Zürich. Verlag Franz Deuticke, Leipzig and Wien.

I. Band: Qualitative Analyse. 13 Auflage, 540 pp.

This being the 13th edition, speaks for a well-deserved popularity. The book was originally devised and written in 1885 to meet the initial requirement of Dr. Treadwell's students. It is a credit to American science that this American chemist has been professor of chemistry at a Swiss University from 1882 until his death on June 24, 1918. Since then his son, W. D. Treadwell, followed in his footsteps.

One principal advantage of the book is the tables and charts showing the separation of the different groups of cations. It is a method which Prof. Treadwell has successfully used in his laboratory practice and by which students can readily learn the separation. Volume one also contains 29 illustrations and three spectra tables.

II. Band: Quantitative Analyse. 11 Auflage, 757 pp.

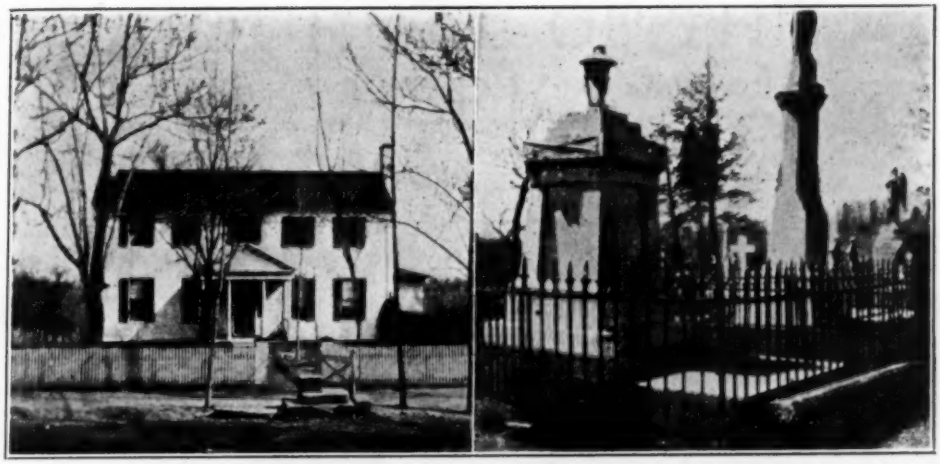
After a chapter "General Remarks" of 32 pages, the text is divided as follows:

1. Gravimetric Analysis of Metals and Metalloids.
2. Volumetric Analysis: Alkalimetry and Acidimetry; Oxidation and Reduction; Precipitation.
3. Gasometric Analysis.

This volume contains 131 illustrations and a number of tables in the Appendix as: Factors, Logarithms and Antilogarithms.

Treadwell's "Brief" Textbook of Analytical Chemistry is indeed a real contribution to this field of science. Treadwell is dead but his work and especially this book will live after him. As the author was a born American, his book should also become better known in America.

OTTO RAUBENHEIMER, PH.M.



Right.—The Grave of General Mercer in Laurel Hill Cemetery, Philadelphia, Pa.—The monument was erected by St. Andrews Society, November 26, 1840, appropriate commemorative inscriptions pay tribute to the hero. Left.—The home of General Hugh Mercer in Fredericksburg—"The Sentry Box"—Back of this, at some distance, is the old Washington farm.

Dr. (afterward Brigadier-General) Hugh Mercer's Apothecary Shop, Fredericksburg, Va. Here General Washington had his desk for the transaction of business when in Fredericksburg.

Wife Mercer